October 21, 2010

Via Electronic Mail

Marlene H. Dortch
Office of the Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: In the Matter of Preserving the Open Internet Broadband Industry Practices (GN Docket No. 09-191); In the Matter of Broadband Industry Practices (WC Docket No. 07-52); Wireless Telecommunications Bureau Seeks Comment on The State of Mobile Wireless Competition (WT Docket No. 10-133); In the matter of Framework for Broadband Internet Service (WT Docket No. 10-127)

Dear Ms. Dortch:

The New America Foundation's Open Technology Initiative (NAF) submits these *ex parte* comments in response to the Federal Communications Commission's Public Notice seeking comments on the proceedings noted above. NAF has been conducting research and analysis on wireline broadband price, speeds, and bandwidth caps as well as the state of competition in wireline and mobile wireless broadband service markets internationally. Here, we submit several reports comparing international and U.S. broaband and teleccommunications services (see Appendix).

Our reports compare the price, speed and bandwidth caps of wireline broadband services avaialable to consumers across industrialized countries, including the U.S. These reports and analyses reveal that consumers in the U.S. pay far more for residential broadband services at lower speeds and more restrictive bandwidth caps in comparison with other similar countries. We also submit a report on cell phone plans available to consumers and their price structure in eleven countries across the globe. This study shows that consumers in the U.S. are paying substantially higher for rates voice, text, and data services than other countries and have very limited choices of cell phone service plans. We beleive this data should strongly encourage the Commission to examine the telecommunications markets of other comparable nations and their policy approaches to increase competition, lower prices, and improve service in the U.S.

Respectfully Submitted,

\s\
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APPENDIX

New America Foundation

Price of the Pipe:
Comparing the Price of Broadband Services Around the Globe

James Losey and Chiehyu Li, Open Technology Initiative
April 2010

OPEN TECHNOLOGY INITIATIVE

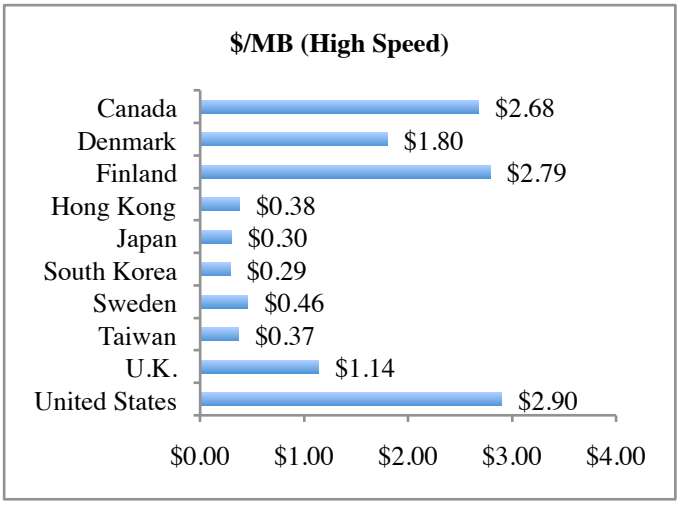
The speed and price of a broadband connection are two important details about a broadband service that vary greatly between different countries. In comparing prices and speeds of broadband services around the globe, we find that the United States is among the most expensive and slowest of the countries surveyed in this report. Price is one of the main barriers to adoption,[1] and prices for broadband in the U.S. are on the rise.[2] Major steps need to be taken to bridge the speed and price disparities separating the U.S. from other industrialized countries.

For this survey we compare price and speeds of both the fastest speeds available (high tier) for residential service, as well as the service equal to or greater than 1 megabit per second (Mbps) or more (low tier), for 10 industrialized nations. The services listed are the cheapest regular monthly rate for broadband, unbundled from other services such as telephone and voice (when available.) Because different speeds are available in the nations surveyed, price (USD) per megabit is used to provide a more direct comparison. Upstream speeds are listed when available but only downstream speeds are compared.

Broadband Service Speed and Price (High Tier)

Country	Downstream	Upstream	Price
Canada[3]	25	7	$67
Denmark[4]	40	2	$72
Finland[5]	24	1	$67
Hong Kong[6]	100	Unlisted	$38
Japan[7]	200	100	$60
South Korea[8]	100	Unlisted	$29
Sweden[9]	100	100	$46
Taiwan[10]	100	5	$37
U.K.[11]	50	Unlisted	$57
United States[12]	50	20	$145

The United States is the most expensive of the ten countries surveyed for high tier broadband service. The broadband services available internationally include prices as low as $26 a month for a 100 Mbps connection in South Korea and speeds as fast as a 200 Mbps connection in Japan for $60 a month. While broadband service with speeds of 100 Mbps is available in Taiwan for $37 a month, $38 a month in Hong Kong, and $46 a month in Sweden, broadband is half the speed for over three times the price in the U.S. where 50 Mbps service costs $145 a month. Other countries surveyed joining the U.S. in the slower half of high tier speeds cost less than half the price. For example, 24 Mbps broadband service is available in Finland for $67 a month, 25 Mbps broadband is available in Canada for $67 a month, 40 Mbps broadband is available in Denmark for $72 a month, and 50 Mbps broadband service is available for $57 a month in the U.K.



Comparing the price per megabit ($/Mb) demonstrates how much more expensive broadband is in the United States. Broadband service of 100 Mbps costs $0.29/Mb in South Korea, $0.37/Mb in Taiwan, $0.38 in Hong Kong, and $0.46/Mb in Sweden. In comparison, 50 Mbps service in the U.S. is several times more expensive at $2.90/Mb. In the U.K. a 50 Mbps connection is available for $1.14/Mb, less than half the price of the same speed in the U.S. Canada and Finland are similar to the U.S. with broadband service for $2.68/Mb and $2.79, respectively, but all three are more expensive every other country

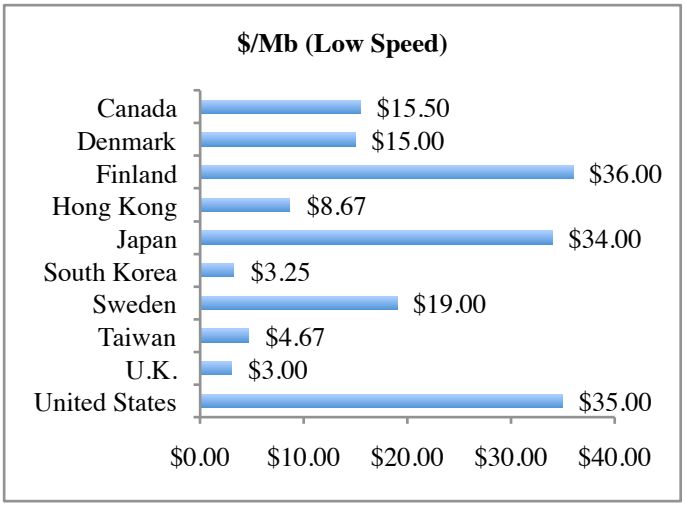
surveyed. The next most expensive country is Denmark where broadband service is considerably less at $1.80/Mb. In contrast, broadband service of 200 Mbps is available for $.30/Mb in Japan.

Broadband Service Speed and Price Low Tier)

Country	Downstream	Upstream	Price
Canada[13]	2	800 Kbps	$31
Denmark[14]	2	512 Kbps	$30
Finland[15]	1	512 Kbps	$36
Hong Kong[16]	1.5	Unlisted	$13
Japan[17]	1	512 Kbps	$34
South Korea[18]	8	640 Kbps	$26
Sweden[19]	1	1	$19
Taiwan[20]	3	768 Kbps	$14
U.K.[21]	10	Unlisted	$30
United States[22]	1	1	$35

When comparing the low tier broadband service offerings of other countries the United States fairs slightly better with prices closer to the middle of the pack but often for slower speeds. While 10 Mbps broadband service is available for $30 a month in the U.K. and an 8 Mbps connection costs $26 a month in South Korea, in the U.S. slower service of 1 Mbps is considerable more expensive at $35 a month. The same speed of 1 Mbps is available for a similar monthly rate in Japan ($34) and Finland ($36) these rates are much higher than Sweden where 1 Mbps broadband service is available for only $19 a month. Several countries have faster speeds available for much expensive rates than the U.S. For example 1.5 Mbps broadband service costs $13 a month in Hong Kong and a 2 Mbps connection is available for $31 a month in Canada or $30 a month in Denmark. 3 Mbps service in Taiwan costs only $14 a month.

The U.S. is among the most expensive of the countries surveyed when comparing the price per megabit for low tier broadband service. Broadband service of 1 Mbps is available in Japan for $34/Mb, Finland for $36/Mb and the U.S. for $35/Mb, but all other countries surveyed were considerably less expensive. For example, 1 Mbps broadband service in Sweden costs $19/Mb and 2 Mbps broadband service in Denmark and Canada is less than half the price per megabit of the U.S. at $15.00/Mb and $15.50/Mb, respectively. Less expensive still is Hong Kong, where 1.5 Mbps broadband service is $8.67/Mb, Taiwan where 3 Mbps broadband service costs $4.67/Mb, and South Korea where an 8 Mbps broadband service is available for $3.25/Mb. The U.K. has the least expensive and fastest low tier broadband service: a 10 Mbps connection is $3.00/Mb.



Lack of competition is a major factor influencing the higher prices and slower speeds found in the U.S. In the National Broadband Plan the Federal Communications Commission (FCC) notes that 96% of households in America have access to 2 or fewer providers,[23] and prices are higher when only one or two providers are available.[24] An FCC study found that "non-adopters concerned with cost would be willing to pay, on average, $25 per month for broadband,"[25] a rate that is available abroad but the current low tier broadband available in the U.S. unbundled from other services is significantly more expensive than this threshold. In addition to increasing access to broadband, adoption efforts must address affordability and overcome market conditions that have resulted in broadband service in the United States being both the slowest, and most expensive of countries surveyed.

For the United States to increase the speed and affordability of broadband requires intervention at the national policy level from both the FCC and Congress is needed including:

- The FCC should immediately begin collecting "more detailed and accurate data on actual availability, penetration, [and] prices" offered by broadband service providers, and make the data publicly available."[26]
- The FCC should foster wireline-wireline competition by incorporating successful strategies from other leading nations including structural separation and open access, as documented in a recent FCC commissioned report.[27]
- Congress should pursue "dig once" legislation to mandate the installation of high-capacity, open access "dark fiber bundles along all federally-subsidized and direct federal highway projects."[28]

End Notes

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[1] According to a Federal Communications Commission report 36% of Americans who have not adopted broadband cite cost as the primary reason. A report from the National Telecommunications and Information Administration documents that price is a main reason for 26.3% of non-adopters. *See* John B. Horrigan, *Broadband Adoption and use in America: OBI Working Papers Series No. 1* p. 5 (Federal Communications Commission 2010), a*vailable at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296442A1.pdf (*Broadband Adoption and Use in America*) *and* National Telecommunications and Information Administration *Digital Nation: 21st Century America's Progress Towards Universal Broadband Internet Access* p. 13 (2010) *available at* http://www.ntia.gov/reports/2010/NTIA_internet_use_report_Feb2010.pdf (*Digital Nation*).

[2] John Horrigan *Home Broadband Adoption 2009: Broadband adoption increases, but monthly prices do too*. (Pew Internet and America Life Project June 2009) (*Home Broadband Adoption)*.

[3] Bell offers *Fibe 25* service is $67.95 CAD with no TV bundle after a twelve-month promotional period. Converted March 26, 2010 using Google currency converter and rounded to the nearest dollar. http://www.bell.ca/shopping/internet.portal?_nfpb=true&_windowLabel=PrsShpInt_NewAccess_internetBrowse_portlet&PrsShpInt_NewAccess_internetBrowse_portlet_actionOverride=%2Fportlets%2Fpersonal%2Finternet%2Fbrowse%2FgetDetailPage&_pageLabel=PrsShpInt_NewAccess. (Visited March 26, 2010).

[4] Full Rate offers *2 MBit* service is 399 kr. a month and includes a phone line. An unbundled service is not available. Converted March 26, 2010 using Google currency converter and rounded to the nearest dollar. http://www.fullrate.dk/privat/bredbaand/ (translated). (Visited March 26, 2010).

[5] Elisa offers *24M/1M Full Rate* service for €49.90 a month in Helsinki. Converted March 26, 2010 using Google currency converter and rounded to the nearest dollar. http://www.elisa.fi/yksityisille/laajakaista/laajakaista/hinnat_ja_saatavuus/39/ (translated). (Visited March 26, 2010).

[6] Hutchison Global Communications offers 100Mbps broadband Internet service for Hong Kong Dollar 298 per month. 24-month contract is required. Converted March 26, 2010 using Oanda currency converter and rounded to the nearest dollar. http://www.hgcbroadband.com/superbroadband.html (translated). (Visited April 1, 2010).

[7] NTT FTTH service is for a single home. Converted March 18, 2010 using Oanda currency converter and rounded to the nearest dollar. http://flets.com/next/index.html (translated). (Visited March 18, 2010).

[8] SK Telecom Broadband Fiber Internet Pricing. Price is without contract. Converted March 18, 2010 using Oanda currency converter and rounded to the nearest dollar. http://www.skbroadband.com/eng/iproduct/evalley.asp (translated). (Visited: March 18, 2010).

[9] Bredband 2 offers *Stockholm OpenNet 100/100 Mbit/s* for 329 SEK a month. Converted March 26, 2010 using Google currency converter and rounded to the nearest dollar. http://abonnemang.pricerunner.se/pr/bredband/jamfor.php#fs. (Search for Stockholm using post code 11351) (Visited March 26, 2010).

[10] Service from Chungwa Telecom FTTx. Converted March 18, 2010 using Oanda currency converter and rounded to the nearest dollar. http://www.cht.com.tw/CHTFinalE/Web/Personal.php?CatID=898. http://www.cht.com.tw/PersonalCat.php?CatID=898&Module=Fee,Describe (translated). (Visited March 18, 2010).

[11] Virgin Mobile offers *Up to 50 Mb Broadband* for £38 a month after a 3 month promotional period when not bundled with a virgin phone line. Converted March 26, 2010 using Google currency converter and rounded to the nearest dollar. http://allyours.virginmedia.com/websales/product.do?id=15208. (Visited March 26, 2010).

[12] Verizon offers *Fastest Plan* through FiOS for $$144.99 when not purchased with a Verizon phone line or TV bundle. Rounded to the nearest dollar. http://www22.verizon.com/Residential/FiOSInternet/Plans/Plans.htm (Visited: March 18, 2010)

[13] Bell offers *Essential Plus* service is $31.95 CAD with no TV bundle after a twelve-month promotional period. Converted March 26, 2010 using Google currency converter and rounded to the nearest dollar. http://www.bell.ca/shopping/internet.portal?_nfpb=true&_windowLabel=PrsShpInt_NewAccess_internetBrowse_portlet&PrsShpInt_NewAccess_internetBrowse_portlet_actionOverride=%2Fportlets%2Fpersonal%2Finternet%2Fbrowse%2FgetDetailPage&_pageLabel=PrsShpInt_NewAccess. (Visited March 26, 2010).

[14] Full Rate offers *Op til 40 Mbit* service for 169 kr. a month and includes a phone line. Converted March 26, 2010 using Google currency converted and rounded to the nearest dollar. http://www.fullrate.dk/privat/bredbaand/ (translated). (Visted March 26, 2010).

[15] Elisa offers *1M /512 kbit/s* €26.90 a month in Helsinki. Converted March 26, 2010 using Google currency converter and rounded to the nearest dollar. http://www.elisa.fi/yksityisille/laajakaista/laajakaista/hinnat_ja_saatavuus/39/ (translated). (Visited March 26, 2010).

[16] Hutchison Global Communications offers 1.5Mbps broadband Internet service for Hong Kong Dollar 103 per month. 24-month contract is required. Converted April 1, 2010 using Oanda currency converter and rounded to the nearest dollar. http://www.hgcbroadband.com/res_net_bb_powercom.html (translated). (Visited: April 1, 2010).

[17] Service from J:COM Cable Internet. Converted March 18, 2010 using Oanda currency converter and rounded to the nearest dollar. http://www.jcom.co.jp/services/net/services/zaq/services.html (translated). (Visited: March 18, 2010).

[18] Service from KT QOOK Internet Services. Price is without contract. Converted March 18, 2010 using Oanda currency converter and rounded to the nearest dollar. http://java.up2.co.kr/megapass_lite.htm (translated). (Visited March 18, 2010).

[19] ePhone offers *Stockholm Opennet 1/1 Mbit/s* Search for 139 SEKa month. Converted March 26, 2010 using Google currency converter and rounded to the nearest dollar. http://abonnemang.pricerunner.se/pr/bredband/jamfor.php#fs. (Search for Stockholm using post code 11351) (Visited March 26, 2010).

[20] Service from Chungwa Telecom FTTx. Converted March 18, 2010 using Oanda currency converter and rounded to the nearest dollar. http://www.cht.com.tw/CHTFinalE/Web/Personal.php?CatID=898 ; http://www.cht.com.tw/PersonalCat.php?CatID=898&Module=Fee,Describe (translated). (Visited March 18, 2010).

[21] Virgin Mobile offers *Up to 10 Mb Broadband* for £20 a month after a 3 month promotional period when not bundled with a virgin phone line. Converted March 26, 2010 using Google currency converter and rounded to the nearest dollar. http://allyours.virginmedia.com/websales/product.do?id=15208. (Visited March 26, 2010).

[22] Verizon offers *Starter Plan* DSL service for $34.99 when not purchased with a Verizon phone line or TV bundle. Rounded to the nearest dollar. Verizon DSL without home phone service. https://www22.verizon.com/Residential/HighSpeedInternet/Plans/Plans.htm. (Visited March 26, 2010.)

[23] National Broadband Plan p. 37.

[24] *Home Broadband Adoption*.

[25] *Broadband Adoption and Use in America* p. 5 and *Digital Nation* p. 13.

[26] See recommendation 4.2, National Broadband Plan p. 43

[27] Yochai Benker et al., *Next Generation Connectivity: A Review of Broadband Internet Transitions and Plicy From Around the World* (Berkman Center for Internet and Society 2010).

[28] Benjamin Lennett and Sascha Meinrath, *Building a 21st Century Broadband Superhighway: A Concrete Build-out Plan to Bring High-Speed Fiber to Every Community* (New America Foundation 2009).

Residential High-Speed Internet Comparison Pricing in the U.S. and Japan

Open Technology Initiative, New America Foundation

Chiehyu Li, Research Fellow

June 2009

- The following chart lists the price, download and upload speeds of residential Internet services in the U.S. and Japan.
- NTT (Nippon Telegraph and Telephone) is the major incumbent telephone operator in Japan. NTT has focused on fiber-optic business while Yahoo! BB (a subsidiary of SoftBank Telecom Corp.) has had first-mover advantage for DSL Internet. Due to unbundling requirements, Yahoo! BB and @nifty provide DSL service by renting NTT's telephone lines at low prices.
- **Cable/DSL service**
  - In the U.S., the price for cable or DSL (1Mbps-7 Mbps) ranges from roughly $20-45/month. Comcast has higher speed Internet, 15Mbps-50Mbps, and costs $43-$140 per month.
  - In Japan, the typical Internet speed is higher than the U.S. (8Mbps-50Mbps), and costs $30-60 per month. J:COM, a large cable Internet provider, has cable Internet up to 160Mbps, costs $63 ($0.4 per megabit).
  - The high-speed Internet market is very competitive in Japan. Customers who pay two dollars more can upgrade from 8Mbps to 12Mbps or even more. For this reason, customers tend to choose higher speed Internet because the marginal costs are low.
- **Fiber-optic service**
  - In the U.S., Verizon is the only large provider of fiber-optic service, FiOS. There are three options of the service, 15Mbps, 25Mbps, and 50Mbps, $50-$145 per month.
  - In Japan, the average of fiber-optic speed is up to 100Mbps~1Gbps, costs from $25 to $56 per month ($0.06-0.7 per megabit) for condo residences (up to 6 households or so) depending on VDSL/LAN/Fiber distribution; single house residences are charged higher rates, $55-67($0.03-0.6 per megabit), which is both much cheaper and much faster than the U.S.

For these price comparisons, 1 Japanese yen=0.01 US Dollars (June 11, 2009)

Residential High-Speed Internet Comparison Pricing in the U.S. and Japan

U.S.

Cable Internet

AT&T				Comcast[1]				Verizon			
download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps
				Up to 15 Mbps	Up to 3 Mbps	$43	$2.9				
				Up to 20 Mbps	Up to 4 Mbps	$53	$2.7				
				Up to 30 Mbps	Up to 5 Mbps	$63	$2.1				
				Up to 50 Mbps	Up to 10Mbps	$140	$2.8				

DSL

AT&T[4]				Comcast				Verizon[5]			
download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps
Up to 768 bps	Up to 384kbps	$20	$26					Up to 1Mbps	Up to 384kbps	$20	$20
Up to 1.5Mbps	Up to 384kbps	$35	$23.3					Up to 3Mbps	Up to 768kbps	$30	$10
Up to 3Mbps	Up to 512kbps	$40	$13.3					Up to 7.1Mbps	Up to 768kbps	$43	$6.1
Up to 6Mbps	Up to 768kbps	$45	$9.7								

Fiber

AT&T				Comcast				Verizon[9]			
download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps
								Up to 15Mbps	Up to 5Mbps	$50	$3.3
								Up to 25Mbps	Up to 15Mbps	$70	$2.8
								Up to 50Mbps	Up to 20Mbps	$145	$2.9

Japan

Cable Internet

				J:COM[2]				@nifty(JCN)[3]			
download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps
				Up to 1 Mbps	Up to 512kbps	$31	$31	Up to 2 Mbps	Up to 256bps	$30	$15
				Up to 24 Mbps	Up to 2 Mbps	$52	$2.2	Up to 8 Mbps	Up to 1 Mbps	$40	$5
				Up to 40 Mbps	Up to 2 Mbps	$58	$1.5	Up to 30 Mbps	Up to 2 Mbps	$50	$1.7
				Up to 160 Mbps	Up to 10 Mbps	$63	$0.4				

DSL

NTT East[6]				Yahoo!BB[7]				@nifty[8]			
download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps
Up to 1 Mbps	Up to 512kbps	$31	$31	Up to 8 Mbps	Up to 0.9 Mbps	$50	$6.3				
Up to 1.5 Mbps	Up to 512kbps	$48	$32	Up to 12Mbps	Up to 1 Mbps	$54	$4.5				
Up to 8 Mbps	Up to 1 Mbps	$50	$6.3	Up to 26Mbps	Up to 1 Mbps	$57	$2.2	Up to 12Mbps	Up to 1 Mbps	$34	$2.8
Up to 12 Mbps	Up to 1 Mbps	$51	$4.3	Up to 50Mbps	Up to 3 Mbps	$58	$1.2	Up to 39Mbps	Up to 1 Mbps	$39	$1
Up to 40 Mbps	Up to 1 Mbps	$52	$1.3	Up to 50.5Mbps	Up to 12.5 Mbps	$61	$1.2	Up to 50Mbps	Up to 3 Mbps	$46	$0.9
Up to 47 Mbps	Up to 5 Mbps	$53	$1.1								

Fiber

NTT East[6]				Yahoo!BB[7]				@nifty[8]			
download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps	download stream	Upload stream	$	$Per Mbps
Up to 100Mbps ~1Gbps	Up to 100Mbps ~1Gbps	$55[10]	$0.06	Up to 100Mbps	Up to 100Mbps	$67[10]	$0.7	Up to 100Mbps	Up to 100Mbps	$67[10]	$0.7
Up to 100Mbps	Up to 100Mbps	$25 -38[11]	$0.3 -0.4	Up to 100Mbps	Up to 100Mbps	$40-56[11]	$0.4 -0.6	Up to 100Mbps	Up to 100Mbps	$41 -47[11]	$0.4 -0.5
Up to 1Gbps	Up to 1Gbps	$34 -44[11]	$0.03 -0.04								

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[1] Comcast Cable Internet Pricing http://www.comcast.com/Shop/Buyflow/Default.ashx?area=6&SourcePage=Internet June 11, 2009
[2] J:COM (Jupiter Telecom) Internet Pricing http://www.jcom.co.jp/services/net/services/common/services.html June 15, 2009
[3] @Nifty (JCN) Cable Internet Pricing. Service covers Ueno, Tokyo http://www.ctn.jp/net/catv/price/index.html June15, 2009
[4] AT&T High Speed Internet Plans (Location set up in Zipcode 22202) http://www.att.com/gen/general?pid=10891 June 15, 2009
[5] Verizon high-speed Internet Plans http://www22.verizon.com/Residential/HighSpeedInternet/Plans/Plans.htm June 15, 2009
[6] NTT Internet Pricing http://flets.com/service/index.html?link_id=g01 June 16, 2009
[7] Yahoo!BB Internet Pricing http://bbpromo.yahoo.co.jp/price/index.html June 15, 2009
[8] @Nifty Internet Pricing http://setsuzoku.nifty.com/ June 16, 2009
[9] Verizon FiOS Internet Plans and Pricing http://www22.verizon.com/Residential/FiOSInternet/Plans/Plans.htm June 22, 2009
[10] Fiber Internet Pricing for single house.
[11] Fiber Internet Pricing for condo; price various depending on VDSL/Fiber/LAN distribution.

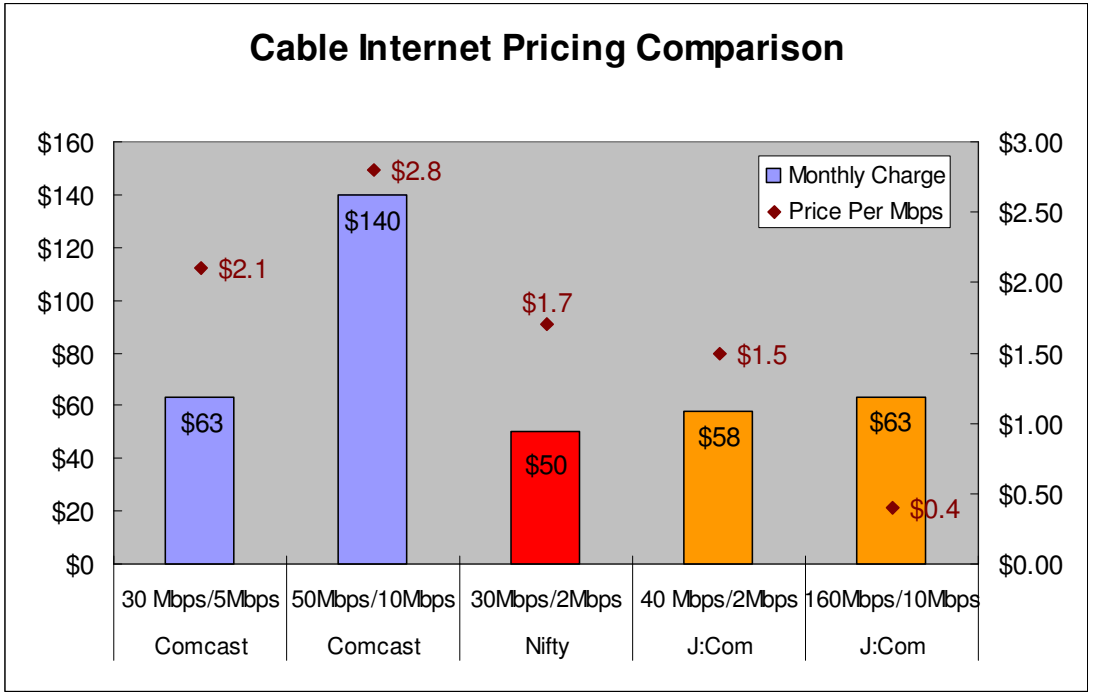

Table 1: Cable Internet Pricing Comparison
This chart compares Comcast, Nifty and J:COM's cable internet service and pricing. J:COM has the fastest cable Internet speed of 160Mbps at the monthly charge of $63. Its price per Mbps is the cheapest, $0.4, among other services.

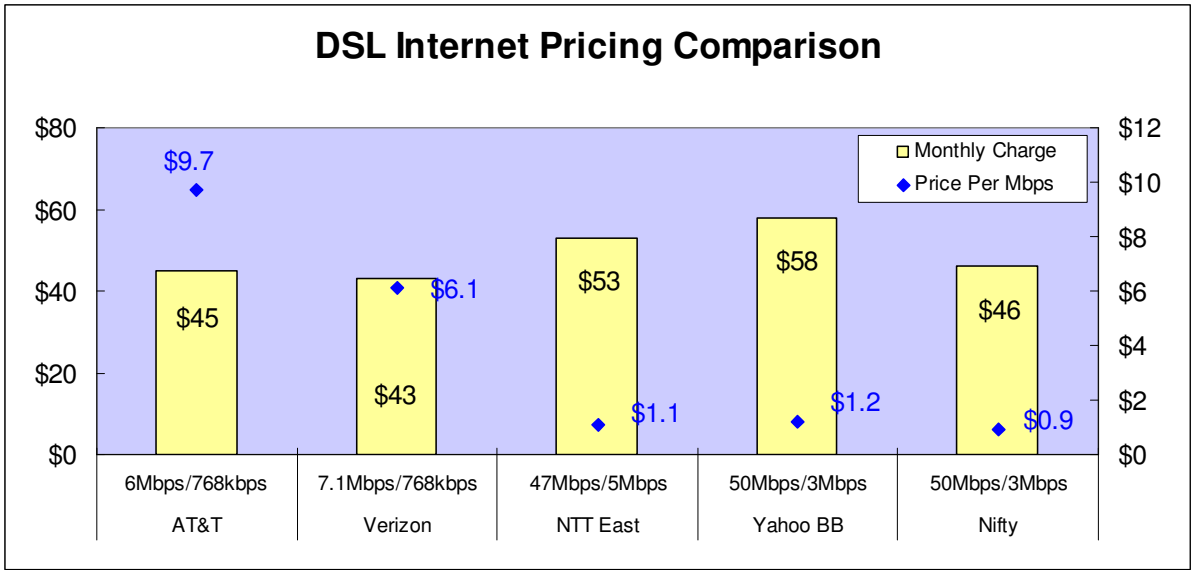

Table 2: DSL Internet Pricing Comparison

The chart compares DSL Internet between five U.S. and Japanese providers. Japanese providers: NTT East, Yahoo BB and Nifty obviously have incredibly cheap price $1 per Mbps comparing to AT&T and Verizon, $6-9.

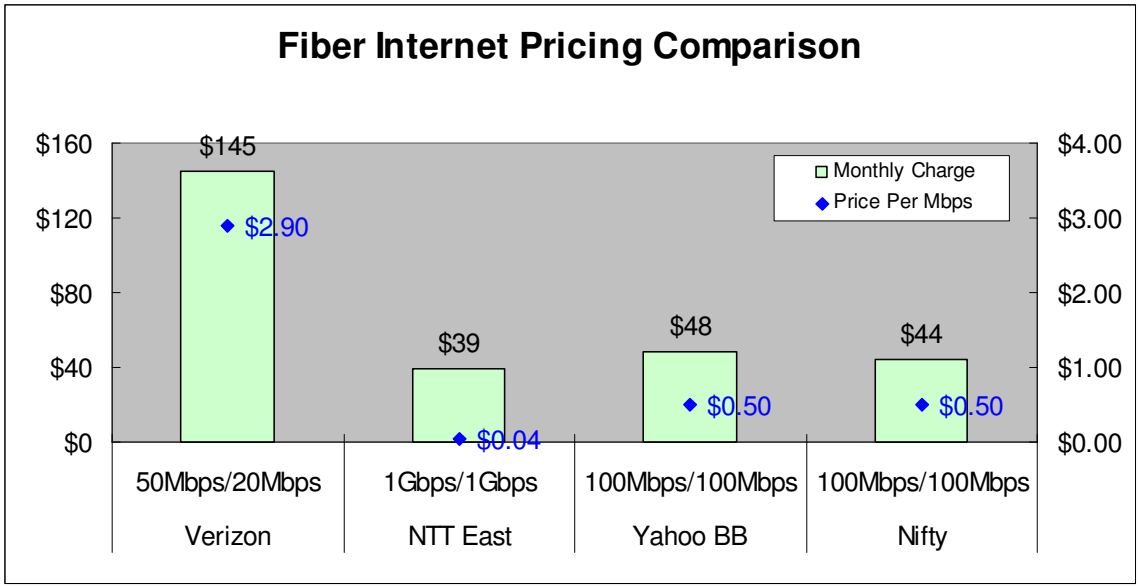

Table 3: Fiber Internet Pricing Comparison

There is a discrepancy between the U.S. and Japan's fiber Internet service. Verizon's FiOS's fastest fiber service is 50Mbps at the price of $145 while NTT East is providing 20 times faster fiber Internet up to 1Gbps in both download and upload stream and charging only 1/3 price, $39, per month for condo residences.

NEW AMERICA FOUNDATION

An Open Technology Initiative Report

Bandwidth Caps for Residential High-Speed Internet in the U.S. and Japan

By Chiehyu Li and James Losey, New America Foundation

August 10, 2009

As part of the Open Technology Initiative's continuing research to compare international broadband capabilities and policies, we have completed this report comparing bandwidth or usage cap policies between Internet Service Providers (ISPs) in the United States and Japan. Bandwidth caps are imposed limits on the amount of data or traffic a subscriber can consume over their Internet connection. The report compares caps across multiple pricing tiers for residential high-speed Internet services including cable modem, fiber-to-the-home (FTTH) or fiber-to-the-premise (FTTP) and Digital Subscriber Lines (DSL). The report reveals a large discrepancy in the usage limits ISPs place on consumers in the two countries, with U.S. providers substantially limiting the amount of bandwidth their subscribers can consume. The data has been juxtaposed with the price and the speed of the service offering and the complete data and sources are available in an appendix at the end of the report.

ISPs with the most constrictive bandwidth caps are in the United States. As shown in Chart 1, U.S. Internet service providers (ISP) have monthly bandwidth caps as low as 1GB for combined upstream and downstream traffic, while many Japanese ISPs only utilize bandwidth caps of 5GB per day or approximately 150GB per month for upstream bandwidth, with no limit on the amount of data consumers can download.

Lowest Bandwidth Cap									
United States					**Japan**				
ISP	**Speed Down/Up**	**Monthly Price**	**Monthly Cap Down/Up**	**P2P Limits**	**ISP**	**Speed Down/Up**	**Monthly Price**	**Monthly Cap Up Only**	**P2P Limits**
Cable One	1.5Mbps/150Kbps	$26	1GB total	No	i-revo	100Mbps/100Mbps	$51-130	150GB	No
Cox	768Kbps/256Kbps	$19.95	3GB/1GB	Yes	BB. Excite	47Mbps/5Mbps	$63	420GB	Yes
	1.5Mbps/384Kbps	$29.99	4GB/1GB			100Mbps/100Mbps	$60		
Time Warner	768Kbps/128Kbps	$19.95	40GB total (proposed)	Yes	Internet Initiative Japan	100Mbps/100Mbps	$48-77	450GB	No
	1.5Mbps/256Kbps	$34.95							
	7Mbps/384Kbps	$49.95							
	10Mbps/512Kbps	$59.90							
AT&T	768Kbps/384Kbps	$19.95	20GB (proposed)	No	SoftBank ODN	100Mbps/100Mbps	$53-72	450GB	No

Chart 1: Lowest bandwidth cap proposed or implemented in the U.S. and Japan.

In the U.S., bandwidth caps vary by price and speed of the service offering. For example, Cable One has the lowest monthly cap at 1GB for their Economy Plan, which advertises speeds up to 1.5 Mbps down and 150 Kbps up. Advertising similar speeds, Cox's Economy Light Package and Starter Package allows subscribers to consume 3GB bandwidth a month for downstream and 1GB a month for upstream, which translates to an average daily consumption of 100MB downstream and 33MB upstream. From a user perspective, these caps mean that subscribers cannot download more than ten, or upload more than three, high-resolution digital photos (roughly 10MB/photo) a day.

Although services offered by Japanese ISPs are more expensive than these "economy plans," they are not only much faster but offer considerably more flexibility in terms of bandwidth consumption. In Japan, the lowest cap for residential Internet of the companies we researched is 150GB per month for upstream only, implemented by i-revo, a nationwide

fiber ISP that provides up to 100Mbps symmetrical access. BB Excite, SoftBank and Internet Initiative Japan (IIJ) also imposed 420GB to 450GB bandwidth per month only on the upload side.

If a user exceeds these bandwidth caps, ISPs in the U.S. and Japan have different approaches. For example, if a subscriber uses more than 1GB on Cable One's Economy Plan, the company levies an additional fee for each additional 1GB of bandwidth consumed beyond the cap. For their other tiered services, Cable One may suspend the customer's service or require customers to upgrade to the highest tiered service. In Japan, most ISPs notify users who exceed bandwidth by email or letter. If the violation continues to exist, Japanese ISPs may suspend or terminate the service.

Even comparing the higher bandwidth caps in the two countries, including the highest priced residential plans, bandwidth caps in the U.S. are drastically lower and more restrictive than those in Japan. Chart 2 shows service options with the highest bandwidth cap in the two countries. U.S. ISPs such as Cox, Charter, Comcast and Cable One cap bandwidth from 20 GB to 250GB per month for combined up and downstream traffic for their higher-priced Internet services. Among these ISPs, Cox has the highest monthly caps, offering 300GB for downstream and 100GB for upstream to Ultimate Package subscribers (50Mbps/5Mbps). Comcast caps bandwidth at 250GB a month, combined upstream and downstream, for all tiered Internet services. Continuing the U.S. trend towards more restrictive Internet service, AT&T has proposed bandwidth caps of 20-150GB a month. In addition, some of these ISPs have imposed network management on users' Internet traffic.

High Bandwidth Cap									
United States					**Japan**				
ISP	**Speed Down/Up**	**Monthly Price**	**Monthly Cap Down/Up**	**P2P Limits**	**ISP**	**Speed Down/Up**	**Monthly Price**	**Monthly Cap Up Only**	**P2P Limits**
AT&T	1.5Mbps/384Kbps	$25	Proposed 20-150GB	No	NTT OCN	47Mbps/5Mbps	$45-79	900GB	No
	3Mbps/512Kbps	$30				100Mbps/100Mbps	$65		
	6.0Mbps/768Kbps	$35							
Cox	10Mbps/738Kbps	$45	40GB/15 GB	Yes	Mega EGG	100Mbps/100Mbps	$56	900GB	No
	20Mbps/3Mbps	$60	60GB/15 GB						
	28Mbps/2Mbps	$80	150GB/ 50GB						
	50Mbps/5Mbps	$140	300GB/ 100 GB						
Charter	1Mbps	$19.99	100GB total	Yes	Info Sphere	47Mbps/5Mbps	$48	900GB	Yes
	5Mbps	$54.99				100Mbps/100Mbps	$60		
	9Mbps	$64.99							
	20Mbps	$79.99	250GB total						
Comcast	1Mbps/384Kbps	$24.95	250GB total	No	TikiTiki	50.5Mbps/12.2Mbps	$46	900GB	No
	6Mbps/1Mbps	$42.95				100Mbps/100Mbps	$36-64		
	8Mbps/2Mbps	$52.95							
Cable One	5Mbps/0.5Mbps	$49	90GB total	No	Open Circuit	47Mbps/5Mbps	$27	900GB	No
	10Mbps/1Mbps	$59	150GB total			100Mbps/100Mbps	$55-84		

Chart 2: High bandwidth cap implemented/proposed by U.S. and Japanese ISPs

As listed in Chart 3, not all ISPs in the U.S. and Japan cap usage. Of the U.S. ISPs we researched, Verizon is the only ISP that has neither proposed nor implemented bandwidth caps for subscribers of any of their service tiers. However, Verizon's terms of service explain that they may cap bandwidth usage or suspend Internet service if a subscriber overuses bandwidth. There are also several Japanese ISPs including KCN cable, famille and NetVALUE that do not have

bandwidth caps for any tiers of their ADSL and fiber Internet services. Our research also reveals that fewer of these ISPs impose any network management on a subscriber's connection, such as slowing down peer-to-peer traffic or other limits.

No Bandwidth Cap									
United States					Japan				
ISP	**Speed Down/Up**	**Monthly Price**	**Monthly Cap**	**P2P Limits**	**ISP**	**Speed Down/Up**	**Monthly Price**	**Monthly Cap**	**P2P Limits**
Verizon	1Mbps/384Kbps	$19.99	N/A	No	KCN	160Mbps/5Mbps	$40	N/A	No
	3Mbps/768Kbps	$29.99				12Mbps/1Mbps	$32		
	7.1Mbps/768Kbps	$42.99				1Gbps/1Gbps	$58		
	15Mbps/5Mbps	$49.99			J:COM	160Mbps/10Mbps	$63	N/A	Yes
	25Mbps/15Mbps	$69.99			famille	47Mbps/5Mbps	$44	N/A	No
	50Mbps/20Mbps	$144.95				100Mbps/100Mbps	$41-46		
					iTSCOM	160Mbps	$63	N/A	Yes
						47Mbps/5Mbps	$42-66		
						100Mbps-1Gbps/ 100Mbps-1Gbps	$35-68		
					Net VALUE	47Mbps/5Mbps	$48-76	N/A	No
						100Mbps-1Gbps/ 100Mbps-1Gbps	$45-74		

Chart 3. No bandwidth cap implemented/proposed by U.S. and Japanese ISPs

This report demonstrates that bandwidth caps in the U.S. are more restrictive than in Japan. ISPs in Japan only cap upstream traffic, if at all, and few impose network management practices to limit bandwidth consumption. The results of this report should encourage policymakers to investigate market conditions in Japan to determine how and why their networks supports far more per-customer throughput than comparable networks in the U.S. Additionally, regulators and policymakers need to investigate why Japanese high-speed Internet subscribers get faster speeds at lower prices, with fewer limitations than subscribers in the U.S.

Appendix

United States							Japan					
ISP	**Internet Service**		**Speed Down/Up**	**Monthly Price**	**Monthly Cap Down/Up**	**P2P Limits**	**ISP**	**Internet Service**		**Speed Down/Up**	**Monthly Price**	**Monthly Cap Up Only**	**P2P Limits**
Cable One	C[1]	Economy	1.5 Mbps/150Kbps	$26	1GB total[2]	No	KCN	C/A/F[3]	Cable	160Mbps/5Mbps	$40	N/A	No
		Standard	5 Mbps/500Kbps	$49	90GB total				ADSL	12Mbps/1Mbps	$32	N/A	No
		Premium	10 Mbps/1Mbps	$59	150GB total				Fiber: K-Broad	1Gbps/1Gbps	$58	N/A	No
Cox	C[4]	Economy/Lite Package	768Kbps/256Kbps	$19.95	3GB/1GB[5]	Yes[6]	iTSCOM	C/F/D[7]	Cable	160Mbps	$63	N/A	Yes[7]
		Value Package	1.5Mbps/384Kbps	$29.99	4GB/1GB				FLET'S ADSL	47Mbps/5Mbps	$42-66		
		Preferred Package	10Mbps/2Mbps	$44.99	40GB/15GB				Fiber Hikari	100Mbps/100Mbps	$35-68		
		Premier Package	20 Mbps/3Mbps	$59.99	60GB/15GB		J:COM	C[8]	Cable every tier	160Mbps/10Mbps	$63	N/A	Yes
		Premier Plus Package	28 Mbps/2Mbps	$79.99	150GB/50GB		KATCH	C[9]	Cable every tier	120Mbps/10Mbps	$59	N/A	Yes
		Ultimate Package	50 Mbps/5Mbps	$139.99	300GB/100GB		NTT OCN	D/F[10]	FLET'S ADSL	47Mbps/5Mbps	$45-79	900GB	No
Time Warner	C[11]	Road Runner Lite	768Kbps/128Kbps	$19.99	(Proposed) 5-40GB total[12]	Yes[13]			FLET'S Hikari	100Mbps/100Mbps	$65		
		Road Runner Basic	1.5Mbps/256Kbps	$34.95			TikiTiki	D[14]	ADSL	50.5Mbps/12.2Mbps	$46	900GB	No
		Road Runner Standard	7Mbps/384Kbps	$49.95				F	FLET'S Hikari	100Mbps/100Mbps	$36-64		
		Road Runner Turbo	10Mbps/512Kbps	$59.90			Open Circuit	D[15]	ADSL	47Mbps/5Mbps	$27	900GB	No
Charter	C[16]	High Speed Internet	1Mbps	$19.99	100-250GB total[17]	Yes[17]		F	Fiber FLET'S Hikari	100Mbps/100Mbps	$55-84		
		Internet	5Mbps	$54.99			Mega EGG	F[18]	Fiber Service/ Fiber Hikari	100Mbps/100Mbps	$56	900GB	No
		Internet Plus	9Mbps	$64.99			Info Sphere	D/F[19]	ADSL Dynamic Type	47Mbps/5Mbps	$48	900GB	Yes
		High Speed Internet Max	20Mbps	$79.99					Fiber FLET'S Hikari	100Mbps/100Mbps	$60		
Comcast	C[20]	Economy	1Mbps/384Kbps	$24.95	250GB total[21]	No[22]	BB. Excite	D/F[23]	ADSL MOREIII	47Mbps/5Mbps	$63	420GB	Yes
		Performance	6Mbps/1Mbps	$42.95					Fiber FLET'S Hikari	100Mbps/100Mbps	$60		
		Blast	8Mbps/2Mbps	$52.95			SoftBank SpinNET	D/F[24]	Fiber All Hikari FLET'S plans	100Mbps/100Mbps	$56-178	450GB	No
AT&T	D[25]	Basic DSL	768Kbps/384Kbps	$19.95	(Proposed) 20-150GB[26]	No	SoftBank ODN	D/F[27]	Fiber: B FLET'S plan/course/s-course	100Mbps/100Mbps	$53-72	450GB	No

		Express DSL	1.5Mbps/384Kbps	$25			Internet Initiative Japan (IIJ)	D/F[28]	Fiber FLET'S Hikari	100Mbps/100Mbps	$48-77	450GB	No
		Pro DSL	3Mbps/512Kbps	$30			Plala	D/F[29]	Fiber FLET'S Hikari	100Mbps/100Mbps	$63	450GB	Yes
		Elite DSL	6Mbps/768Kbps	$35			i-revo	F[30]	Fiber FLET'S Hikari	100Mbps/100Mbps	$51-130	450GB	No
Verizon	D[31]	Starter Plan	1Mbps/384Kbps	$19.99	N/A	No[32]	JOMON	D/F[33]	ADSL	8Mbps	$44	N/A	Yes
		Power Plan	3Mbps/768Kbps	$29.99					Fiber FLET'S Hikari	100Mbps/100Mbps	$41-46		
		Turbo Plan	7.1Mbps/768Kbps	$42.99			ASAHI Net	D/F[34]	FLET'S ADSL	47Mbps/1.5Mbps	$54-63	N/A	Yes
	F[31]	Fast	15Mbps/5Mbps	$49.99					Fiber FLET'S	100Mbps/100Mbps	$60		
		Faster	25Mbps/15Mbps	$69.99			@nifty	D/F[35]	FLET'S ADSL	50Mbps/5Mbps	$31-45	N/A	Yes
		Fastest	50Mbps/20Mbps	$144.95					Fiber Internet: Hikari FLET'S	100Mbps/100Mbps	$65		
							BIGLOBE	D/F[36]	FLET'S ADSL	50Mbps	$31	N/A	Yes
									Fiber Hikari FLET'S/ Hikari One	1Gbps/1Gbps	$65		
							So-Net	D/F[37]	ADSL	50Mbps	$28	N/A	No
									Fiber FLET'S and Hikari One	1Gbps/1Gbps	$65		
							InfoSakyu	D/F[38]	ADSL FLET'S	47Mbps/5Mbps	$39	N/A	No
									Fiber FLET'S	100Mbps-1GMbps /100Mbps-1GMbps	$45-74		
							famille	D/F[39]	ADSL FLET'S	47Mbps/5Mbps	$48-76	N/A	No
									Fiber Hikari	100Mbps-1GMbps /100Mbps-1GMbps	$45-74		
							U-netSURF	D/F[40]	ADSL FLET'S	47Mbps/5Mbps	$42	N/A	No
									Fiber Hikari	100Mbps-1GMbps /100Mbps-1GMbps	$45-74		
							FUSION GOL	D/F[41]	ADSL FLET'S	47Mbps/5Mbps	$66	N/A	No
									Fiber B FLET'S	100Mbps-1GMbps /100Mbps-1GMbps	$74		
							ADSL-direct	D/F[42]	ADSL FLET'S	50Mbps/5Mbps	$29-44	N/A	No
							Net VALUE	D/F[43]	ADSL FLET'S	47Mbps/5Mbps	$38	N/A	No
									Fiber B FLET'S	100Mbps-1GMbps /100Mbps-1GMbps	$65		

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An International Comparison of Cell Phone Plans and Prices

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October, 2010

Cell phones are intertwined with our lives no matter where we are in the world. The New America Foundation's Open Technology Initiative (OTI) recently completed a survey on the costs and types of mobile cell phone packages available to consumers around the world. With recent policy debates over Bill Shock and Consumer Disclosure, this study provides useful insight into business models prevalent in several key countries. Plans in some countries provide different offerings and bundled services for students, professionals, family, corporate and special needs consumers. In other countries it appears that a significantly more competitive market than what exists in the United States has resulted in innovative offerings and lower pricing for consumers. In contrast, in countries where competition is less and regulation more lax, higher prices and a limited choice of plans prevail.

In OTI's study, we researched cell phone voice, text and data services for prepaid, regular postpaid, and unlimited postpaid plans provided by prominent cell phone carriers in 11 countries. We consider unbundled services using rates available to individual consumers.[1] To provide a more direct comparison, our study indicates the price in US Dollar (USD)[2] per minute, per text, and per megabyte at a unit level and minimum total cost of individual cell phone package.

Voice Service

Key Findings: Across postpaid and prepaid voice plans, Canada, U.S., U.K., and Japan mostly fall in the high to middle price tiers while India, Hong Kong and Sweden fall in the low price tier.

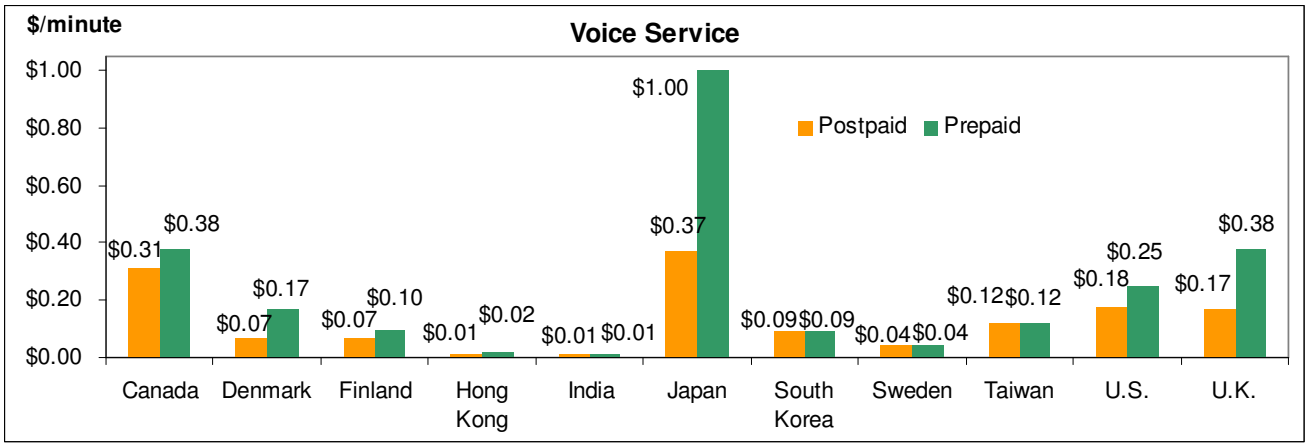
Voice Plans	Postpaid Plan (monthly fee/minutes)	Postpaid Plan ($/minute)	Prepaid Plan ($/minute)
Canada[3]	$38.70/250	$0.31*	$0.38
Denmark[4]	$17.00/240	$0.07	$0.17
Finland[5]	$25.50/350	$0.07	$0.10
Hong Kong[6]	$8.50/600	$0.01	$0.02
India[7]	N/A**	$0.01	$0.01
Japan[8]	N/A**	$0.37	$1.00
South Korea[9]	N/A**	$0.09	$0.09
Sweden[10]	N/A***	$0.04	$0.04
Taiwan[11]	N/A***	$0.12	$0.12
U.S.[12]	$39.99/450	$0.18*	$0.25
U.K.[13]	$17.00/100	$0.17	$0.38

**The rate is doubled as customers have to pay for incoming and outgoing calls.*
***Postpaid packages are not offered (like in the U.S.). The rate is charged by usage. Monthly charge might apply.*
**** Preset postpaid packages are offered. However usage charges can be deducted for voice and text.*

For postpaid voice plans, the U.S. and U.K. are in the high price tier of countries surveyed, trailing only behind Canada and Japan. Since receiving phone calls is free of charge in the countries studied, except

for the U.S. and Canada (where customers are charged for calls placed and received); the rate per minute is doubled for these two countries, as shown in the figure. The cheapest postpaid voice plan is available in Hong Kong at $8.50 for 600 minutes per month, which is $0.01 per minute, while the monthly rate is $38.70 for 250 minutes in Canada and $39.99 for 450 minutes in U.S.(or $39.99 for 225 minutes of call minutes placed), which is $0.30 and $0.18 per minute respectively; almost 30 times higher than Hong Kong ($0.01/minute).

In addition, our study found that while some countries only provide plans and charge consumers with a preset minimum number of minutes regardless of their usage (though they can chose from the different volumes of preset plans depending on their needs) other countries charge consumers only for actual usage with a very negligible monthly fee. India and Sweden charge only by usage and cost $0.01 per minute and $0.04 per minute respectively.



In the case of prepaid voice plans, while Canada, Japan and the United Kingdom are in the highest price tier among the countries surveyed, with costs of $0.37 to $0.38 per minute. The United States is in the middle price tier at $0.25 per minute. This is much higher than the rates in countries such as India, Hong Kong, and Sweden, where pricing is $0.01/minute, $0.02/minute, and $0.04/minute respectively. Customers in South Korea ($0.09), Finland ($0.10), Taiwan ($0.12) and Denmark ($0.17) also enjoy relatively cheap rates for prepaid voice service.

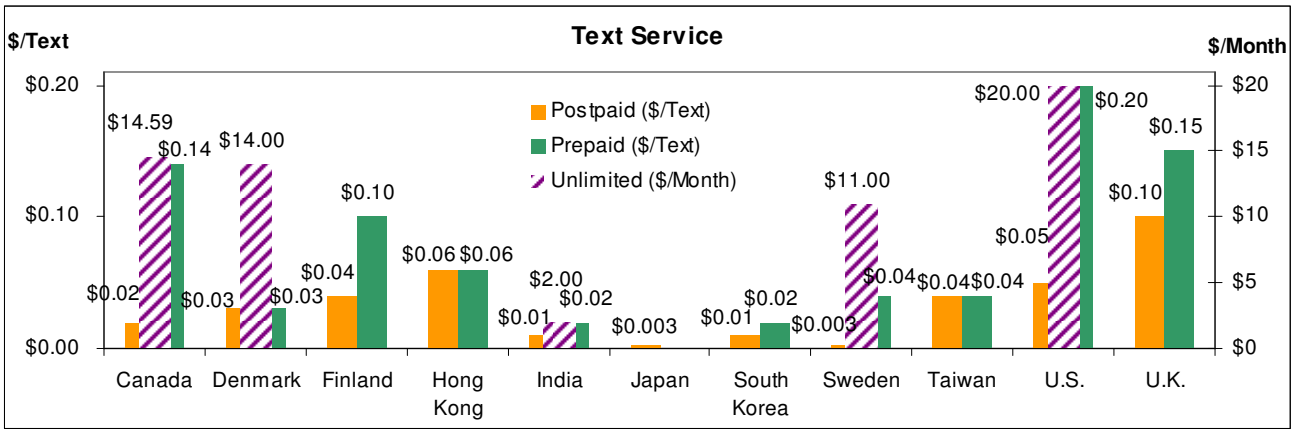
Text Service

Key Findings: U.S. is in the highest price tier in the postpaid and prepaid text plans sharing space with U.K., Canada and Denmark while Sweden, India and Japan fall in the lowest price tier.

Text Plans	Postpaid Plan ($ monthly/texts)	Postpaid Plan ($/text)	Unlimited Plan ($ monthly)	Prepaid Plan ($/text)
Canada[14]	$4.80/250	$0.02	$14.59	$0.14
Denmark[15]	$5.00/200	$0.03	$14.00	$0.03
Finland[16]	$5.70/150	$0.04	N/A	$0.10
Hong Kong[17]	N/A**	$0.06	N/A	$0.06
India[18]	N/A**	$0.01	$2.00	$0.02
Japan[19]	N/A**	$0.003	N/A	N/A
South Korea[20]	N/A**	$0.01	N/A	$0.02
Sweden[21]	$17.80/5500	$0.003	$11.00	$0.04
Taiwan[22]	N/A***	$0.04	N/A	$0.04
U.S.[23]	$5.00/200	$0.05*	$20.00	$0.20
U.K.[24]	$7.70/75	$0.10	N/A	$0.15

**The rate is doubled as customers have to pay for incoming and outgoing texts.*
***Postpaid packages are not offered (like in the U.S.). The rate is charged by usage. Monthly charge might apply.*
**** Preset postpaid packages are offered. However usage charges can be deducted for voice and text.*

For postpaid text plans, the U.K. provides the most expensive plan at $7.70 for 75 texts per month ($0.10/per text) with the U.S. following a close second at $5.00 for 200 texts per month (or $5.00 for 100 texts sent). Since U.S. customers have to pay for sent and received texts, the rate per text is doubled to $0.05. In contrast, the cheapest text rate offered is in Sweden at $17.80 for 5500 texts ($0.003 per text). In Canada, the cost is $4.80 for 250 texts ($0.02 per text). Again, while in the above countries, consumers are provided plans with a preset limit of texts, other countries charge consumers only by usage. Japan charges only $0.003 per text sent while both India and South Korea charge $0.01 per text sent.



Only five of the eleven countries surveyed offered unlimited text plans, namely, Canada, Denmark, India, Sweden and the United States. India offers the cheapest unlimited text plan $2.00 per month, followed by Sweden at $11.00 per month, Denmark at $14.00 per month and Canada at $14.59 per month. The U.S. price points are noticeably higher at rates of up to $20 per month.

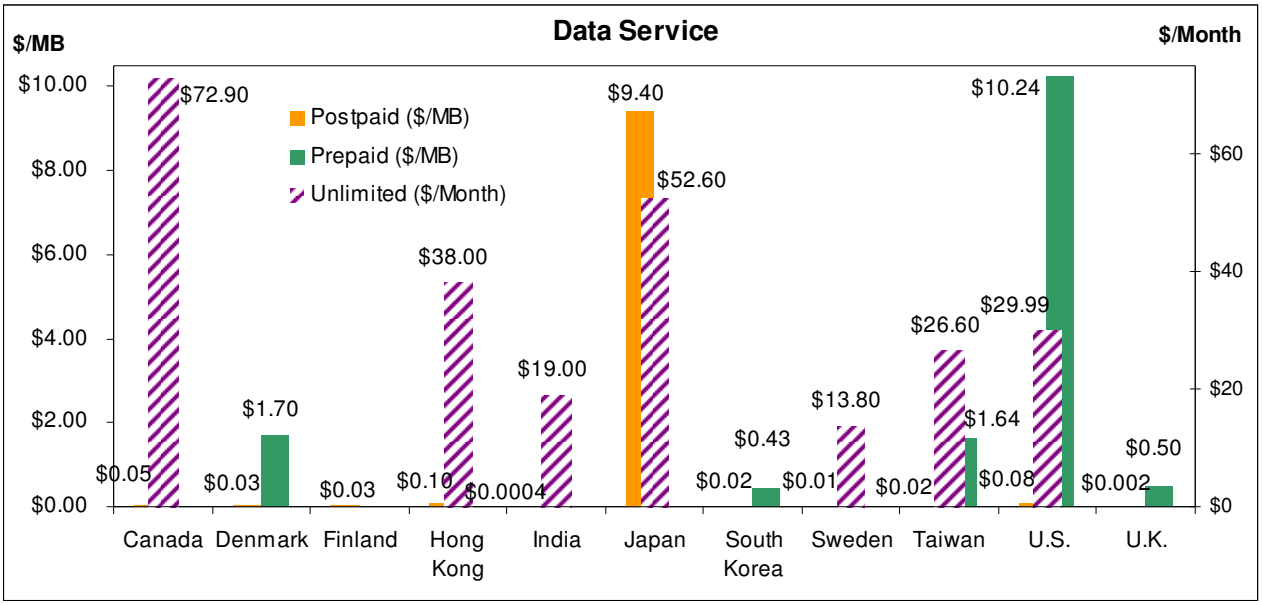
In the case of prepaid text plans, India offers the cheapest available rate at $0.01 per text, followed by South Korea at $0.02 per text, and Denmark at $0.03 per text, whereas the U.S. and the U.K. have much expensive rates of $0.20 and $0.15 per text respectively.

Data Service

Key Findings: Japan, Hong Kong, U.S. and Canada feature in the high to medium price tiers while India, Sweden, and U.K. emerge as winners in the low price tier.

Data Plans	Postpaid Plan ($ monthly/MB)	Postpaid Plan ($/MB)	Unlimited Plan ($ monthly)	Prepaid Plan ($/MB)
Canada[25]	$24.00/500	$0.05	$72.90	N/A
Denmark[26]	$17.00/500	$0.03	N/A	$1.70
Finland[27]	$8.90/300	$0.03	N/A	N/A
Hong Kong[28]	$5.00/50	$0.10	$38.00	N/A
India[29]	$2.10/5120	$0.0004	$19.00	$0.0004
Japan[30]	$4.70/0.5	$9.40	$52.60	N/A
South Korea[31]	$12.00/500	$0.02	N/A	$0.43
Sweden[32]	$9.50/1024	$0.01	$13.80	N/A
Taiwan[33]	$12.00/500	$0.02	$26.60	$1.64
U.S.[34]	$15.00/200	$0.08	$29.99	$10.24
U.K.[35]	$7.70/5120	$0.002	N/A	$0.50

In postpaid data plans, the U.S. offers $15.00 for 200 megabytes (MB) per month ($0.08/MB), lower than Japan which is at $4.70 for 0.5MB ($9.40/MB). However, the U.S. rate is several times more expensive than India at $2.10 for 5120MB ($0.0004/MB), Sweden at $9.50 for 1024MB ($0.01/MB), U.K. at $7.70 for 5120MB ($0.002/MB), South Korea and Taiwan at $12.00 for 500MB ($0.02/MB), Denmark at $17.00 for 500MB ($0.03/MB) and Finland at $8.90 for 300MB ($0.03/MB).



In the case of unlimited data plans, the U.S. is in the middle tier of service rates. The U.S. offers a plan of $29.99 per month which is cheaper than Canada ($72.90/month), Japan ($52.60/month) and Hong Kong ($38.00/month). On the contrary, Sweden offers much cheaper unlimited data plans for $13.80 per month, followed by India ($19.00/month), and Taiwan ($26.60/month).

For prepaid data plans, the U.S. has the most expensive rate at $10.24 per MB, whereas India offers $0.0004/MB, $0.43/MB in South Korea and $0.50/MB in the U.K. Several other countries that also have cheaper rates are $1.64/MB in Taiwan and $1.70 in Denmark.

It is important to note that in most countries, consumers can only subscribe to data plans after they subscribe to voice and text plans. Thus, even though certain countries offer cheaper postpaid or unlimited data plans, they end up paying higher price for a complete cell phone package if voice and text rates are higher.

Minimum Cost of a Complete Cell Phone Package

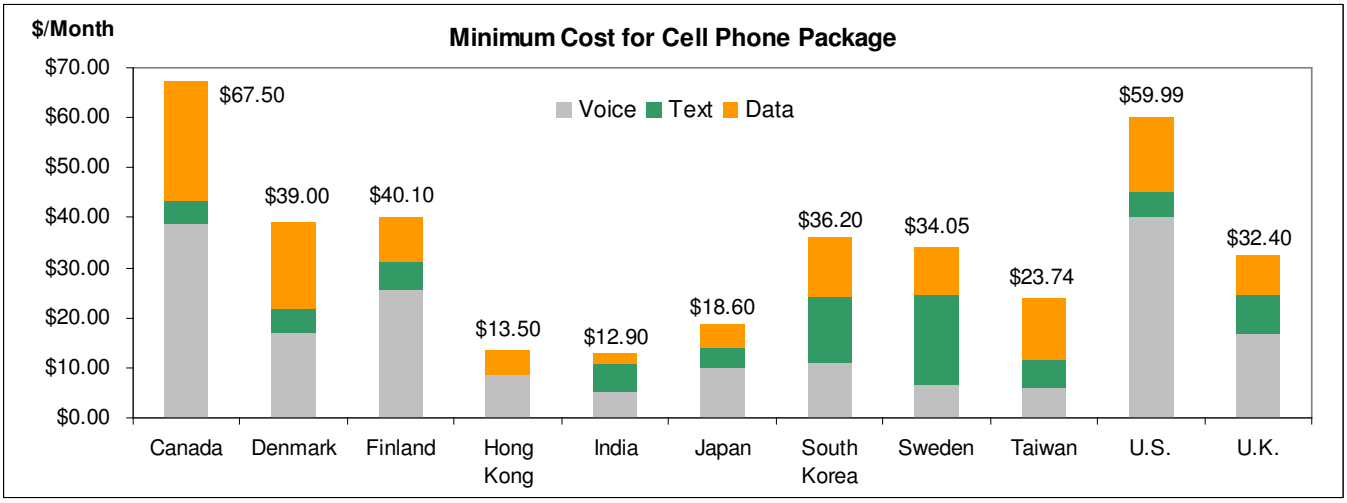
To get a holistic picture of the cost of a cell phone service, it is necessary to look at the total cost of all three services: voice, text and data. We will arrive at the final cost to the consumer by looking at the sum of the minimum monthly cost of each of the best available postpaid voice, text and data plans.

$/Month	Voice	Text	Data	Total
Canada	$38.70	$4.80	$24.00	$67.50
Denmark	$17.00	$5.00	$17.00	$39.00
Finland	$25.50	$5.70	$8.90	$40.10
Hong Kong	$8.50	N/A	$5.00	$13.50
India	$5.40	$5.40	$2.10	$12.90
Japan	$10.10	$3.80	$4.70	$18.60
South Korea	$10.80	$13.40	$12.00	$36.20
Sweden	$6.75	$17.80	$9.50	$34.05
Taiwan	$5.94	$5.80	$12.00	$23.74
U.S.	$39.99	$5.00	$15.00	$59.99
U.K.	$17.00	$7.70	$7.70	$32.40

Type 1: Preset Limits
In Canada and U.S., consumers have the highest minimum monthly charge for a complete postpaid cell phone service at $67.50 and $59.99 respectively. Other countries that follow a similar cost structure at lower rates are U.K. at $32.40, Denmark at $39.00, and Finland at $40.10. These costs are based on plans where consumers are charged for a preset amount of voice minutes, texts, and/or data amount irrespective of the minimum amount of service they use. Consumers do have the option of choosing higher preset limits if their usage volume is higher. After going above the preset threshold, consumers are charged by high per usage rates.

Type 2: Pay-Per-Use
Following a different business model, operators in countries like India and Japan charge as per unit of usage along with a small monthly fee of $12.90 in India, $18.60 in Japan. Another country that follows this cost structure at a higher monthly minimum rate in addition to usage charges is South Korea at $36.20.

Type 3: A combination of Preset Limit and Pay-Per-Use
In the case of Hong Kong, Taiwan and Sweden, which have total price figures of $13.50, $23.74 and $34.05 respectively, customers are charged as per their usage with a slight relation to the Type 1 case above. A minimum monthly amount is charged to consumers but this charge can be used towards paying for voice minutes, text, or data. After customers cross the minimum monthly threshold, they are charged per unit of usage rates.



Conclusion

It is clear that some countries offer service at consistently lower prices than others. The United States tends to fall in a band of countries that charge higher prices to individual wireless consumers for everything except pure voice service where prices are comparable. Cost structures and business models undoubtedly vary as a result of the level of competition and innovation in each country and it is essential that the countries that have high prices such as the US we carefully consider additional steps that could be taken with respect to encourage competition or impose regulation that such that the US becomes the engine of innovation for better and more competitively priced service offerings.

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[1] [1]All sites are translated into English and were visited in September, 2010.
[2] [2]All exchanges rates are converted to U.S. Dollars by Yahoo Currency Converter in September. http://finance.yahoo.com/currency-converter/#from=USD;to=EUR;amt=1
[3] [3]Canadian cell phone carrier Rogers' popular voice service charges $38.7 (CAD 40) per month for 250 minutes, weekend and weekday after 9pm is free. In addition, consumers can choose either unlimited text/ picture & video messaging, unlimited MY5 Canada-wide talk/ extreme text/ picture & video messaging, unlimited local calling to/from Rogers Wireless, Rogers Home Phone or Fido® customers, double minutes (equals 300 minutes), or unlimited 6pm early evening calling. http://www.rogers.com/web/Rogers.portal?_nfpb=true&_pageLabel=WLRS_Plans; voice Pay-As-

You-Go plan starts from $0.38 ($0.4 CAD) per minute. Receiving call from the same plan Pay-As-You-Go users is free. http://www.rogers.com/web/Rogers.portal?_nfpb=true&_pageLabel=WLRS_Plans.

[4] [4]Denmark cell phone carrier Telenor offers postpaid voice plans. For medium volume users, the rate is $17 (DKK 99) for four hours. http://www.telenor.dk/privat/mobil/mobil/abonnementer/tale/index.aspx. Denmark cell phone carrier Telia offers pay-as-you-go voice service and the standard rate is $0.17 (0.99 DKK) per minute. http://shop.telia.dk/telia/Abonnementer/Flex/subscriptionplan.dt?category=subscriptionPlans&abo=telia_flex.

[5] [5]Finland cell phone carrier Sonera offers voice plan $25.5 (€19.99) for 350 minute. https://kauppa.sonera.fi/yksityisille/puhelin_ja_liittyma/liittyma.aspx?Mode=Subscription. Voice Pay-As-You-Go plan charges $0.1 (€0.08) per minute. http://www.sonera.fi/puhelin+ja+liittyma/hinnasto/97/.

[6] [6]Hong Kong carrier SmarTone offers 3G voice service $7 (HKD 56) per month for 600 minutes; in addition to monthly fee, customers has to pay $1.5 (HKD 12) monthly administration fee. Customers subscribe to voice plans can enjoy free text message services when receive and send within same carriers. Voice Pay-As-You-Go plan charges $0.02 (HKD 0.15) per minute for the first 300 minutes, the rate goes down to $0.003 (HKD 0.02). Subscribers have to pay monthly fee $6.43 (HKD 50), which is applicable to deduct all call and data related charges. http://www.smartone-vodafone.com/jsp/mobile/prices/PayGo/tchinese/call_charges.jsp

[7] [7]Indian carrier Bharti-Airtel offers cell phone services across India. The city is set in Mumbai. Bharti-Airtel offers Pay-As-You-Go voice service charging $0.0002 (0.01 Rupees) per second ($0.01/0.6 Rupees per minute) when calling inside network; receiving phone call and message is free. http://www.airtel.in/wps/wcm/connect/airtel.in/airtel.in/home/forme_newuser/mobile/prepaid/. For post-paid plan (Airtel Turbo 249 Plan selected), the rate per minute is $0.01 (0.6 Rupees). Monthly charge $5.4 (249 Rupees) applies. http://www.airtel.in/wps/wcm/connect/airtel.in/airtel.in/home/forme_newuser/mobile/postpaid/tariffs/

[8] [8]Japanese carrier SoftBank offers prepaid service charging $0.1 (¥9) per 6 seconds ($1 per minute). http://mb.softbank.jp/en/prepaid_service/prepaid_plan.html Softbank does not offer voice plans, but charges by usage: $0.185 (¥15.75) per 30 seconds. Customer has to pay monthly fee $10.1 (¥850) in addition to the charge per minute. Tax included. http://mb.softbank.jp/mb/price_plan/3G/orange_plan/simple_index.html

[9] [9]Korean cell phone carrier SK Teleom offers voice service at $0.0015 (1.8 Korean won) per second ($0.09 per minute). Monthly fee $10.75 (12000 Korean won) applies. http://www.tworld.co.kr/outsitens.jsp

[10] [10]Swedish wireless service provider Telia does not offer any package but charges by usage at $0.04 (0.29 SEK) per minute; customers have to pay monthly subscription fee $6.75 (49 SEK), which can be deducted by call and text services. Two years contract required. https://www.tewss.telia.se/privat/katalog/VisaProdukt.do?productRef=/privat/produkter_tjanster/mobilt/abonnemang/teliamobil/teliamobilpratapa.product&preselproducts=500019093&navigationPath=/privat/produkter_tjanster/mobilt/abonnemang/teliamobilpratapa. For pay-as-you-go plan, Telia charges $0.04 (0.29 SEK) per minute for outgoing calls. Receiving phone call is free. https://www.tewss.telia.se/privat/produkter_tjanster/mobilt/kontantkort/?sl=privat_produkter_tjanster_mobilt_kontantkort

[11] [11]Taiwanese cell phone carrier ChungHua Telecom pay-as-you-go plan charges $0.002 (NDT 0.09) per second ($0.12 per minute) for calling the same carrier, $0.005 (NDT 0.16) per second for calling outside carriers. Receiving phone call is free. http://www.idealcard.com.tw/rate.asp For postpaid plans, users can choose to pay minimum monthly fee starting from $5.94 (NDT 183) to deduct all call and text charges. The rate is $0.002 (NDT 0.08) per second ($0.12 per minute) for calling the same carrier, $0.005 (NDT 0.15) per second for calling outside carriers http://www.emome.net/channel?chid=134.

[12] [12]AT&T offers voice plan $39.99 for 450 minutes. Weekend and weekday night are unlimited. http://www.wireless.att.com/cell-phone-service/cell-phone-plan-details/?q_sku=sku3830290&q_planCategory=cat1370011; Pay-As-You-Go plan charges $0.25 per minute for in and out calls, tax, surcharges and fees are excluded. http://www.wireless.att.com/cell-phone-service/cell-phone-plans/pyg-cell-phone-plans.jsp.

[13] [13]UK cell phone carrier Three only offers bundled voice and text services. SIM Only Plan charges monthly fee $17 (£10) for 100 minutes for calling outside networks, 2000 minutes for Three network users and 3000 text messages sent, at page 7. http://www.three.co.uk/_standalone/Link_Document?content_aid=1214305748126 Pay-As-You-Go voice service charges $0.38 (£0.25) per minute when calling other users outside Three network; no charge for calling 3 subscribers. $7.7 (£5) is minimum requirement using the plan http://www.three.co.uk/Pay_As_You_Go/What_it_costs.

[14] [14]Canadian cell phone carrier Rogers' pay-as-you-go text service charges $0.14 (0.15 CAD) per message sent or received. http://www.rogers.com/web/content/wireless-products/addons. Rogers' text plan charges $4.8 (CAD 5) per month for 250 text messages. Receiving text is free when you buy the package. http://www.rogers.com/web/content/add-ons/messagingbundles. Canadian carrier Telus offers unlimited text messaging plan $14.59 (CAD15) per month included incoming and sent Text, Picture or Video Messages. http://www.telusmobility.com/en/BC/mobile_messaging/messagingpackages.shtml.

[15] [15]Denmark cell phone carrier Telia offers text plans starting from $5 (30 kr) for 200 text messages. Receiving text is free. Pay-As-You-Go text charge is $0.03 (DKK 0.2) per SMS. Unlimited text plans is $14 (80 kr) per month. Customers have to pay monthly fee $23.7. http://shop.telia.dk/telia/Abonnementer/Flex/subscriptionplan.dt?category=subscriptionPlans&abo=telia_flex.

[16] [16]Finland carrier Sonera pay-as-you-go plan charges $0.1 (€0.08) per text. http://www.sonera.fi/puhelin+ja+liittyma/hinnasto/97/; text plan is $5.7 (€4.5) for 150 texts sent. Receiving text is free. https://kauppa.sonera.fi/yksityisille/puhelin_ja_liittyma/liittyma.aspx?Mode=Subscription.

[17] [17]Hong Kong carrier SmarTone offers pay-as-you-go text service, $0.06(HKD0.5) per text sent outside carrier subscribers. For postpaid service, consumers pay $0.06 (HKD 0.5) per text sending to outside network. Receiving text from all networks and sending text to inside network is free. No monthly charge applies. No unlimited text plan is offered, but voice plans are offered with complimentary texts sent and received within the same network. http://www.smartone-vodafone.com/jsp/mobile/prices/messaging_price_plan/tchinese/charges.jsp

[18] [18]Indian carier Bharti-Airtel offers several pay-as-you-go text service. $0.02 (1 Rupee) per text sent; receiving message is free. http://www.airtel.in/wps/wcm/connect/airtel.in/airtel.in/home/forme_newuser/mobile/prepaid/ For postpaid plan, the rate is $0.01 (0.6 Rupees) per text sent. Receiving text is free. Monthly charge $5.4 (249 Rupees) applies.http://airtel.in/wps/wcm/connect/airtel.in/airtel.in/home/foryou/mobile/postpaid/tariffs/ Unlimited text services is $2 (99 Rupees) per month for text sent to same carrier within Mumbai area and up to 500 text messages per day sent to nationwide. http://www.airtel.in/BestValue-Offers/Mumbai.html;

[19] [19]Japanese carrier Softbank offers postpaid text plan charging $0.003 (¥0.21) per text sent, receiving text and sending inside network is free. Monthly charge $3.8 (¥315) applies. Softbank also offers pay-as-you-go unlimited text plan for $3.66 (¥300) per month. http://mb.softbank.jp/mb/service/3G/mail/

[20] [20]Korean cell phone carrier SK Teleom charges $0.02 (20 Korean won) per text sent for pay-as-you-go plan. For postpaid plan, the rate is $0.01 (10 Korean won) per text sent, receiving text is free. Monthly charge $13.4 (15000 won) applies http://www.tworld.co.kr/outsitens.jsp.

[21] [21]Swedish wireless service provider Telia charges $0.04 (0.29 SEK) per text sent for pay-as-you-plan. For pay-as-you-go plan, Telia charges $0.04 (0.29 SEK) per minute for outgoing calls. Receiving phone call is free. https://www.tewss.telia.se/privat/produkter_tjanster/mobilt/kontantkort/?sl=privat_produkter_tjanster_mobilt_kontantkort Telia text plan is $17.8 (129 kr) for 5000 SSM messages and 500 MMS messages per month. https://www.tewss.telia.se/privat/katalog/VisaProdukt.do?productRef=/privat/produkter_tjanster/mobilt/tjanster/meddelandetjanster/sms_mms_tillalla.product@SE_TELIA Unlimited monthly text plan is $11 (80 kr). http://shop.telia.dk/telia/Abonnementer/Flex/subscriptionplan.dt?category=subscriptionPlans&abo=telia_flex.

[22] [22]ChungHua Telecom charges $0.04 (NDT 1.22) per text sent to the same network subscribers; $0.05 (NDT 1.6) for outside network subscribers. Receiving text is free. $5.8 (NDT183) is minimum monthly charge using the plan and the charge can be deducted when sending texts. ChungHua Telecom does not offer unlimited text plans. http://www.emome.net/channel?chid=134.

[23] [23]AT&T offers text plan $5 for 200 text, picture, video, and Instant Messaging (IM) messages per month. Pay-Per-Use costs $0.20 per Text/Instant Message; 30 cents per picture/video message. http://www.verizonwireless.com/b2c/splash/plansingleline.jsp

[24] [24]UK cell phone carrier Three offers text service, $0.15 (£0.1) per text sent. Customers receive 25 free texts when top-up £5 in the prepaid phone. http://www.three.co.uk/Pay_As_You_Go/What_it_costs; Three also offers text plans starting from $7.7 (£5) for 75 text messages sent. Page 9. http://www.three.co.uk/_standalone/Link_Document?content_aid=1214305748126. No unlimited text plans available.

[25] [25]Canadian cell phone carrier Rogers offers data package at $24 (25 CAD) per month for 500MB. Additional Data charges $0.05/MB. No Pay-As-You-Go data plan available. http://www.rogers.com/web/Rogers.portal?_nfpb=true&_pageLabel=WLRS_Plans. Canadian carrier Sasktel offers unlimited data plan for $72.9 (CAD 75) per month. http://www.sasktel.com/EndecaUI/controller/_/N-buZ1z140m8/Tab-4294966321

[26] [26]Denmark carrier Telia offers pay-as-you-go data charges $1.7 (DKK 10) /1MB. http://shop.telia.dk/telia/Abonnementer/Flex/subscriptionplan.dt?category=subscriptionPlans&abo=telia_flex Telenor offers data plans, $17 (99 kr) per month for 500MB. http://www.telenor.dk/privat/mobil/mobil/abonnementer/services/surf_med_mobilen/surfer-m/index.aspx

[27] [27]Finland carrier Sonera offers data plan $8.9 (€6.96) for 300MB. https://kauppa.sonera.fi/yksityisille/puhelin_ja_liittyma/netti.aspx?Mode=Subscription&Talk=L201&Sms=L209

[28] [28]Hong Kong carrier SmarTone does not offer pay-as-you-go data plan. Monthly charge of data plan is $5 (HKD38) for 50MB. After 50MB, the charge is $15/15MB until $298 as the maximum charge per month. http://www.smartone-vodafone.com/jsp/mobile/prices/GPRS_price_plan/tchinese/3g_packet.jsp SmarTone also offers 3G unlimited data plan for $38 (HKD 298) per month. For blackberry and Vodafone users, the unlimited data plan charges up to $115.6 (HKD 898). http://www.smartone-vodafone.com/jsp/mobile/prices/GPRS_price_plan/tchinese/3g_packet.jsp

[29] [29]Indian carrier Bharti-Airtel offers Mobile Internet browsing of upto 2GB at a monthly fee $2.1 (98 Rupees) after which charge is $0.0064/50KB. http://www.airtel.in/BestValue-Offers/Mobile_Internet.html Bharti-Airtel offer blackberry unlimited data plan at $19 (899 Rupees) per month. http://airtel.in/wps/wcm/connect/airtel.in/airtel.in/home/foryou/mobile/blackberry/blackberry+internet+services/Tariffs/ For pay-as-you-go data plan, Bharti-Airtel charges $2.1 (98 Rupees) for 2GB. http://www.airtel.in/wps/wcm/connect/airtel.in/airtel.in/home/foryou/mobile/prepaid/services/

[30] [30]SoftBank offers monthly data plan at $4.7 (¥390) for 0.5MB for postpaid data plan. http://mb.softbank.jp/mb/price_plan/3G/packet_s/ Unlimited data plan is offered at $52.6 (¥4,410) per month. http://mb.softbank.jp/mb/price_plan/X/packet_full/.

[31] [31]South Korean carriers SK Telecom offers pay-as-you-go data service $0.0002 (0.25 Korean won) for 0.5KB http://www.tworld.co.kr/common/popup/data_info/popup_datacharge_info.html SK Telecom offers 135 Data Free plan charging $12 (13500 won) for 500MB. http://www.tworld.co.kr/outsitens.jsp

[32] [32]Swedish carrier Telenor does not offer Pay-As-You-Go data plan; monthly data plan $9.5 (69 kr) for 1GB is offered. https://www.tewss.telia.se/privat/produkter_tjanster/mobilt/surfaimobilen/?sl=privat_produkter_tjanster_mobilt_surfaimobilen. Swedish carrier Telenor offers unlimited data plan $13.8 (99 krr) per month. http://www.telenor.se/privat/abonnemang/surfa-obegransat/index.html#T17286_3

[33] [33]ChungHua Telecom data plan charges $0.0002 (NDT 0.005) per 128bytes ($0.0002*8129 (128bytes) =$1.64 per Megabyte). http://www.emome.net/channel?chid=134; data plan is offered at $12 (NTD 400) per month for 500MB unlimited data plan is $26.6 (NTD 850) per month http://www.emome.net/channel?chid=139

[34] [34]AT&T offers pay-as-you-go data service charging $0.01 per kilobyte. http://www.wireless.att.com/cell-phone-service/cell-phone-plans/pyg-cell-phone-plans.jsp; AT&T charges $15 per month for 200MB for iphone, blackberry and smartphone users. Verizon wireless offers unlimited data plan at $29.99 per month. Tax excluded. http://www.verizonwireless.com/b2c/splash/plansingleline.jsp. Website visited on August 31, 2010.

[35] [35]UK carrier Three offers Blackberry data plan for $7.7 (£5) for 2GB per month. Page 9. http://www.three.co.uk/_standalone/Link_Document?content_aid=1214305748126; Data rate is $0.5 (£0.3) per megabyte for pay-as-you-go plans; 150MB is free when top-up £5 in the prepaid phone http://www.three.co.uk/Pay_As_You_Go/What_it_costs.

New America Foundation

Broadband Speeds in Perspective:
A Comparison of National Broadband Goals from Around the Globe

James Losey, Chiehyu Li and Sascha Meinrath
Open Technology Initiative, March 2010

OPEN TECHNOLOGY INITIATIVE

The National Broadband Plan was released this past Tuesday with a vision for broadband in America. The Plan proposes two goals for broadband access: a "universalization target of 4 Mbps [megabits per second] download and 1 Mbps upload," as well as a goal that "100 million U.S. homes should have affordable access to actual download speeds of at least 100 Mbps and actual upload speeds of at least 50 Mbps by 2020."[i] Our analyses compare universal broadband speed goals with multiple other countries from around the globe.

Country	Target (universal unless noted)	Completion Date
Taiwan	99.1% have access to 10 Mbps	2006[ii]
Japan	30 Mbps to 90%	2008[iii]
Sweden	Universal 2 Mbps (100 Mbps for 90% by 2020)[iv]	2010[v]
Germany	1 Mbps	2010[vi]
Denmark	2 Mbps	2010[vii]
United Kingdom	2 Mbps	2012[viii]
Ireland	2.3 Mbps	2012[ix]
South Korea	50 Mbps for 95% (99% had 1 Mbps access by 2008)	2013[x]
Finland	100 mbps connection to over 99%	2015[xi]
United States	4 Mbps down 1 Mpbs up (100 Mbps for ~75%)[xii]	2020[xiii]

Many countries with existing strategies have already met universal broadband access goals or expect to reach them by the end of this year. In Taiwan, for example, 99.1% of the population had access to 10 Mbps broadband in 2006.[xiv] Germany released their Federal Governments Broadband Strategy in 2009, and set a goal to reach universal 1 Mbps speeds in 2010 (with a later benchmark of universal service of 50 Mbps).[xv] Sweden, along with Denmark who defined "broadband" as 2 Mbps in 2001,[xvi] both set 2010 as the target for access to universal broadband.[xvii] Sweden also set a goal for 90% of the country to have access to 100 Mbps connectivity by 2020.[xviii]

In Ireland the National Broadband Scheme expands broadband access "all those who couldn't get broadband before"[xix] beginning with a minimum speed of 1.2 Mbps, upgrading to 1.6 Mbps this year, and achieving a minimum speed of 2.3 Mbps in 2012.[xx] To drive adoption, Ireland also set a standard price for this service of £19.99 (roughly $27) a month. The United Kingdom also expects to reach universal service of 2 Mbps by 2012.[xxi]

Japan began u-Japan in 2006 and set the goal of 90% of the population having access to 30 Mbps broadband access, an achievement they accomplished in 2008.[xxii] South Korea set a goal of 50 Mbps for 95% of the population by 2013 (99% of the populace has had access to 1 Mbps speeds since 2008).[xxiii] Finland has set a goal of 100 Mbps universal connectivity by 2015.[xxiv]

The U.S. National Broadband Plan sets a goal of 4 Mbps downloads (1Mbps upload) by 2020, which, by comparison is a minimum of a half-decade later and often substantially slower than other countries. The concomitant goal of 100 Mbps access for 100 million households by 2020 would cover an estimated 74-76% of the population.[xxv] 10 years ago, the United States was a leader in broadband penetration; however, the latest OECD ranks the U.S. 15th, behind France, Sweden, Canada, and a dozen other countries.[xxvi] As our research clearly documents, even if the U.S. achieves its current broadband speed targets by 2020, unless it substantially raises its broadband goals, the country will remain substantially behind many other countries.

[i] See *Connecting America: The National Broadband Plan* (p. 9 and 135). March 2010, available at http://download.broadband.gov/plan/national-broadband-plan.pdf.
[ii] See *Taiwan National Information and Communication Initiative. 12th Committee Meeting*. (Translated) available at: http://www.nici.nat.gov.tw/content/application/nici/workgroup/guest-cnt-browse.php?cnt_id=89. (last viewed March 19, 2010).
[iii] See *Ministry of Internal Affairs and Communications: National Broadband Deployment Report*. September 2008 (translated), available at: http://www.soumu.go.jp/main_sosiki/joho_tsusin/broadband/broadbandstrategy/seibi.pdf.
[iv] See *Broadband Strategy for Sweden* http://www.sweden.gov.se/content/1/c6/13/49/80/112394be.pdf.
[v] See *Proposal for Swedish broadband strategy*, available at: http://www.pts.se/upload/documents/en/proposed_broadband_strategy_eng.pdf.
[vi] See the Federal Governments Broadband Strategy, available at: http://www.bmwi.de/English/Redaktion/Pdf/broadband-strategy,property=pdf,bereich=bmwi,sprache=en,rwb=true.pdf
[vii] See *It and Telecommunications Report 2009*, available at: http://en.vtu.dk/publications/2009/it-and-telecommunications-policy-report-2009.
[viii] See *Digital Britain* available at http://www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf.
[ix] http://www.three.ie/nbs/faqs.htm
[x] Cited from *Connecting America: The National Broadband Plan* (p. 156). Letter from Young Kyu Noh, Minister Counselor of Broad. & ICT, Embassy of the Republic of Korea, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 09-47, 09-51, 09-137 (Feb. 3, 2010) Attach. at 3, 6 (The 1.5–2M[bps] class high-speed network was completely established in 2008 with a goal of minimum 50Mbps to 95% of households by 2013; also shows that Korea served 99% of population with 1Mbps service by 2008.)
[xi] Making Broadband Available to Everyone (p. 16), available at: http://www.lvm.fi/c/document_library/get_file?folderId=57092&name=DLFE-4311.pdf&title=Making%20broadband%20available%20to%20everyone.%20The%20national%20plan%20of%20action%20to%20improve%20the%20infrastructure%20of%20the%20information%20society%20(LVM50/2008).
[xii] According to 2008 U.S. Census Bureau projections, the population is expected to be 341,387,000 in 2020. Persons per household estimate is based on 2000 census. http://www.census.gov/population/www/projections/files/nation/summary/np2008-t1.xlsandhttp://quickfacts.census.gov/qfd/states/00000.html.
[xiii] See *Connecting America: The National Broadband Plan* (p. 9 and 135). March 2010, available at http://download.broadband.gov/plan/national-broadband-plan.pdf.
[xiv] See *Taiwan National Information and Communication Initiative. 12th Committee Meeting*. (Translated) available at: http://www.nici.nat.gov.tw/content/application/nici/workgroup/guest-cnt-browse.php?cnt_id=89. (last viewed March 19, 2010).
[xv] See *The Federal Governments Broadband Strategy*, available at: http://www.bmwi.de/English/Redaktion/Pdf/broadband-strategy,property=pdf,bereich=bmwi,sprache=en,rwb=true.pdf.
[xvi] See *From Hardware to Content: Strategy for Fast, Cheap and Secure Internet to all of Denmark*, available at: http://en.vtu.dk/files/publications/2001/from-hardware-to-content-strategy-for-fast-cheap-and-secure/html/indhold.htm.
[xvii] See *Proposal for Swedish broadband strategy*, available at: http://www.pts.se/upload/documents/en/proposed_broadband_strategy_eng.pdf.
[xviii] See *Broadband Strategy for Sweden*, available at: http://www.sweden.gov.se/content/1/c6/13/49/80/112394be.pdf.
[xix] http://www.three.ie/nbs/index.htm
[xx] http://www.three.ie/nbs/faqs.htm
[xxi] See *Digital Britain* available at http://www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf.
[xxii] See *Ministry of Internal Affairs and Communications: 2005 White Paper* (p. 1) (translated)http://www.soumu.go.jp/johotsusintokei/whitepaper/ja/h17/pdf/H3030000.pdf and Ministry of Internal Affairs and Communications: National Broadband Deployment Report. September, 2008 (translated). http://www.soumu.go.jp/main_sosiki/joho_tsusin/broadband/broadbandstrategy/seibi.pdf
[xxiii] Cited from *Connecting America: The National Broadband Plan* (p. 156). Letter from Young Kyu Noh, Minister Counselor of Broad. & ICT, Embassy of the Republic of Korea, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 09-47, 09-51, 09-137 (Feb. 3, 2010) Attach. at 3, 6 (The 1.5–2M[bps] class high-speed network was completely established in 2008 with a goal of minimum 50Mbps to 95% of households by 2013; also shows that Korea served 99% of population with 1Mbps service by 2008.)
[xxiv] Making Broadband Available to Everyone (p. 16). http://www.lvm.fi/c/document_library/get_file?folderId=57092&name=DLFE-4311.pdf&title=Making%20broadband%20available%20to%20everyone.%20The%20national%20plan%20of%20action%20to%20improve%20the%20infrastructure%20of%20the%20information%20society%20(LVM50/2008)
[xxv] According to 2008 U.S. Census Bureau projections, the population is expected to be 341,387,000 in 2020. Persons per household is based on 2000 census. http://www.census.gov/population/www/projections/files/nation/summary/np2008-t1.xls and http://quickfacts.census.gov/qfd/states/00000.html. George S. Masnick and Eric S. Belsky from the Joint Center for Housing Studies Harvard University project 135,689,381 total households in 2020 in their report *Revised Interim Joint Center Household Projections Based Upon 1.2 Million Annual Net Immigrants*, March 2006 http://www.jchs.harvard.edu/publications/markets/n06-1_masnick.pdf.
[xxvi] Organization for Economic Co-operation and Development *Four year time series data, penetration (June 2009)*. Available at: http://www.oecd.org/dataoecd/22/12/39574779.xls.

NEW AMERICA FOUNDATION

An Open Technology Initiative Policy Brief

100 Megabits or Bust!

An Overview of Successful National Broadband Goals from Around the Globe

By Chiehyu Li and James Losey, New American Foundation
September 17, 2009

When the Federal Communications Commission delivers a National Broadband Plan to Congress in February 2010 the United States will not be among the first countries to implement a national broadband strategy.[1] Taiwan, Japan, and Korea all introduced national broadband strategies in the beginning of this decade and fifteen European Union Member states proposed National Broadband Strategies in 2003.[2] This report reviews successful strategies and goals from six of these countries: Japan, Korea, Finland, Sweden, Denmark, and Taiwan. These countries share similar goals reflecting the societal need for universal access to the Internet, the importance of providing baseline broadband speeds, and the longer-term benefits of providing broadband up to 100 Mbps. The success of these goals demonstrates the importance of requiring *baseline* speeds up to or exceeding 2 Mbps, as well as the viability of increasing penetration rates for 100 Mbps broadband.

Country	Year	Broadband Plan Short-Term Goal	Broadband Plan Long-Term Goal	Achievement
Japan	2001-2005	30-100 Mbps for ten million households (13 %)		20 Mbps-100 Mbps for 16% population
South Korea	2002-2010	20 Mbps for 80% households	50-100Mbps	32% subscribership
Finland	2008-2015	Universal 1 Mbps	100Mbps	2 Mbps for 60% subscribers
Sweden	2007-2010	Universal 2 Mbps	Develop "future proof" access	2 Mbps for 98% of households and businesses
Denmark	2001	Broadband defined as 2 Mbps		Up 2 Mbps for 96% households and business
Taiwan	2006-2011	1.5 Mbps for 69% households	6Mbps for 69% households 30Mbps for 80% subscribers	1.5 Mbps for 69% households 10Mbps for 99.1% population

Japan was not only one of the first countries to implement a national broadband strategy but also among the first to concretize the goal of 100 Mbps broadband service. Initiated by IT Strategy Headquarters in 2001, *e-Japan strategy* set the goal of establishing fixed network infrastructure with speeds ranging from 30 to 100 Mbps broadband at affordable rates to at least 10 million households.[3] By 2005, DSL service in Japan reached 14 million subscribers, or 11% of the population, with speeds reaching ranging from 20 Mbps to 40 Mbps.[4] Fiber optic providers offered speeds up to 100 Mbps and reported 4 million subscribers, while cable Internet customers accounted for an additional 3 million subscribers, totaling 5% of the population combined.[5] According to the Organization for Economic Cooperation and Development (OECD), total broadband subscribership in Japan exceed 30 million in December 2008, or 24% of the

population.[6] Japan also has the highest average advertised download speed with (92.8 Mbps) according to the OECD.[7]

Korea was also an early adopter in developing a national broadband strategy; the government first began establishing Master Plans for the development of the information society in 1996. In 2002 the government established *e-Korea Vision 2006* with the aim of building a broadband network infrastructure to increase the efficacy of all socio-economic activities, improve higher national performance and raise the quality of life for all Koreans. *E-Korea Vision 2006* defined a short-term goal of providing universal broadband Internet access of 1 Mbps downstream by 2005, which was subsequently upgraded to 2 Mbps by 2006.[8] According to the Korean Ministry of Information and Communication, in 2006 12.1 million Koreans, or 25% of total population, had high-speed broadband access.[9,10]

In 2007, Korea introduced expanded goals with *e-Korea Master Plan,* focused on accelerating construction of broadband coverage networks (BcNs) and facilitating the infrastructure to standardize models and integrate services in converged forms of communications, broadcasting, and the Internet to allow differentiation of service quality. The Korean government expects to provide Internet service with download speeds of 50 to 100 Mbps to 20 million subscribers by 2010.[11] Based on data available from OECD, as of 2008, Korea had fifteen million broadband subscribers, or 32% of the population, with an average advertised download speed of 80 Mbps.[12]

Finland's Ministry of Transportation and Communications released their strategy, *Making Broadband Available to Everyone: The national plan of action to improve the infrastructure of the information society* in 2008, defining concomitant short and long-term broadband goals for the country. At the time, nearly all of the 2.4 million households in Finland had access to broadband speeds of 256 kbps, which the reports stipulates as "only adequate for basic level services" and inadequate for "efficient e-services."[13] *Making Broadband Available to Everyone* recommended raising the universal service obligation for broadband downstream speeds to 1 Mbps by the end of 2010.[14] OECD reports that Finland had 1.6 million subscribers, or 30% of the population, by December 2008.[15] OECD data also lists the average advertised download speed in Finland at 19 Mbps.[16] And at the beginning of 2009, the Finnish Communications Regulatory Authority estimated that 60% of all subscribers had access to a 2 Mbps connection.[17]

Making Broadband Available to Everyone proposes a longer-term goal of providing access to a 100 Mbps connection to "at least 99 percent of permanent residences and permanent offices of businesses and public administration bodies have access, through a fixed or wireless subscriber line of no more than two kilometres' [sic] length linked to the said network" by 2015.[18]

Sweden's electronic communication authority, the National Post and Telecom Agency of Sweden, released *Proposal for Swedish Broadband Strategy* in February 2007 with the goal of providing access to 2 Mbps downstream speeds to "all households, business, and public operations by 2010."[19] At the time, just over 50% of households had access to 2 Mbps broadband.[20] By 2008, 98% of households and business had access to broadband capable of 2 Mbps or better.[21] *Proposal for Swedish Broadband Strategy* stops short of defining longer-term speed goals, but acknowledges that 2 Mbps is not future proof.[22] In 1999 the Swedish ICT Commission published a report claiming a future proof Internet connection was 5 Mbps "costing no more than a bus pass."[23] Based on increasing bandwidth needs of Internet usage, longer-term goals of broadband speeds will need to reflect a combination of high bandwidth and affordability. Sweden currently has 2.9 million broadband subscribers, or 32% of the population, with an average advertised download speed of 12.3 Mbps.[24]

Denmark was another early developer of a national broadband strategy. The Danish Ministry of Information Technology and Research presented their strategy *From Hardware to Content: Strategy for Fast, Cheap and Secure Internet to all of Denmark*, in 2001.[25] *From Hardware to Content* proposes universal access to high-speed affordable broadband and the strategy is reviewed annually. In a 2005 report published by the Ministry of Science, Technology and Innovation, *IT and Telecommunications Policy Report 2005*, the Ministry reports that only 75% of families had access to the Internet, and 82% of

businesses had Internet speeds of 144 kbps or higher.[26] By 2009, 96% of households and business had access to 2 Mbps or greater.[27] Additionally, the OECD reports that Denmark had 2 million subscribers, or 37% of the population in December 2008, with average download speeds of 14.6 Mbps.[28]

Taiwan initially introduced modest goals when Taiwan's National Information and Communication Initiative Group (NICI) and other government agencies launched the *e-Taiwan Program* in 2002 and began a more ambitious strategy in 2007. The *e-Taiwan Program* focused on developing national information and communications infrastructure and applications.[29] The government expected to provide broadband Internet at 1.5 Mbps for six million households as short-term goal and developed a longer-term goal of providing high-speed Internet at 6 Mbps for more than 70% population.[30] By 2006, 99% of Taiwanese residents had Internet access at the speed of 10 Mbps.[31] In March 2007 the NICI introduced the *National Information and Communication Initiative (2007 – 2011)* with the goal of providing access to 30 Mbps broadband to at least 80% of Taiwanese people (approximately 18.4 million people) by 2011.[32]

The precedent set by the national broadband strategies of these half-dozen nations raises concerns about the current broadband position and ambitions of the United States. In October 2000, a report by the Danish National IT and Telecom Agency, *The Status of Broadband Access Services for Consumers and SMEs,* estimated that the United States was "12-24 months ahead any European Country" in terms of broadband penetration and access.[33] Today, although the United States can boast the highest number of subscribers (with 77.5 million) after China, the OECD ranks the United States 15th in terms of broadband subscribership rates with only 26% of the population.[34] Today Denmark has the highest broadband subscribership rate (37%), illuminating how far the United States has slipped behind in broadband access and penetration.[35] Additionally, the OECD ranks the United States 24th in terms of broadband speeds with an average advertised download speed of 9.6 Mbps.[36]

In order for the United States to regain positioning as a broadband leader in access and available speeds our forthcoming National Broadband Plan needs to remain on par with the goals already being achieved by other leading industrial nations. Universal access must serve the entire population with a baseline level of service that allows for users to realize the benefits, communication, and information available through high-speed Internet connections. Additionally, the successes these nations have had in increasing penetration of 100 Mbps broadband connections illustrates the viability of the United States reaching the same outcome. A National Broadband Plan must combine the short-term goal of achieving universal access with the longer-term need for an infrastructure capable of supporting high-bandwidth applications to ensure continued leadership in the growth and innovation of the Internet.

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[1] Pursuant to the American Recovery and Reinvestment Act of 2009

[2] See *Bridging the Broadband Gap* at: http://eur-lex.europa.eu/LexUriServ/site/en/com/2006/com2006_0129en01.pdf

[3] See *E-Japan Strategy and Target* at: http://www.kantei.go.jp/jp/it/network/dai1/0122summary_j.html (Japanese); http://www.kantei.go.jp/foreign/it/network/0122full_e.html (English)

[4] The Japanese population in 2005 is 127.77 million according to the Ministry of Internal Affairs and Communications http://www.stat.go.jp/english/data/kokusei/2005/poj/pdf/2005ch01.pdf

[5] "Number of Broadband Service Subscribers in Japan" in *Policy Framework For Ubiquitous Network Society in Japan* presented by the MIC; March 2006, p. 2. http://www.oecd.org/dataoecd/43/28/36275193.pdf

[6] See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: http://www.oecd.org/dataoecd/22/15/39574806.xls

[7] See *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: http://www.oecd.org/dataoecd/10/53/39575086.xls

[8] *e-Korea Vision 2006. The Third Master Plan for Information Promotion (2002-2006)*. Established in April 2002. http://www.ipc.go.kr/ipceng/public/public_view.jsp?num=2007&fn=&req=&pgno=5

[9] 2006 "Korea Internet White Paper", p. 30, 45. Published by *National Internet Development Agency of Korea*, (2006). Source from Korean Ministry of Knowledge Economy. http://www.itstat.go.kr/eng/

[10] The South Korea population is estimated 48.5 million in mid-2006 by 2006 World Population Bureau in *World Population Data Sheet*, p. 10 http://www.prb.org/pdf06/06WorldDataSheet.pdf

[11] See *U-Korea Master Plan 2006* at: http://www.ipc.go.kr/ipceng/public/public_view.jsp?num=2480&fn=&req=&pgno=1

[12] See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: http://www.oecd.org/dataoecd/22/15/39574806.xls, *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: http://www.oecd.org/dataoecd/21/35/39574709.xls and *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: http://www.oecd.org/dataoecd/10/53/39575086.xls

[13] See *Making Broadband Available to Everyone: The national plan of action to improve the infrastructure of the information society* at: http://www.lvm.fi/c/document_library/get_file?folderId=57092&name=DLFE-4311.pdf

[14] See *Making Broadband Available to Everyone: The national plan of action to improve the infrastructure of the information society* at: http://www.lvm.fi/c/document_library/get_file?folderId=57092&name=DLFE-4311.pdf

[15] See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: http://www.oecd.org/dataoecd/22/15/39574806.xls and *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: http://www.oecd.org/dataoecd/21/35/39574709.xls

[16] See *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: http://www.oecd.org/dataoecd/10/53/39575086.xls

[17] See *Finnish Communications Regulatory Authority Market Review 1/2009* at: http://www.ficora.fi/attachments/5i5K1R7Jv/2009_1_Market_review.pdf

[18] See *Making Broadband Available to Everyone: The national plan of action to improve the infrastructure of the information society* at: http://www.lvm.fi/c/document_library/get_file?folderId=57092&name=DLFE-4311.pdf

[19] See *Proposed Broadband Strategy for Sweden* at: http://www.pts.se/en-gb/Documents/Reports/Internet/2007/Proposed-Broadband-Strategy-for-Sweden---PTS-ER-20077/

[20] http://www.pts.se/upload/Documents/EN/Proposed_broadband_strategy_eng.pdf

[21] Capability means a capacity of, or the ability to be upgraded to, 2 Mbps. See *Broadband Strategy 2008* at: http://www.pts.se/upload/Rapporter/Internet/2009/broadband-survey-2008-pts-er-2009-8.pdf

[22] See *Proposal for Swedish Broadband Strategy* at: http://www.pts.se/upload/Documents/EN/Proposed_broadband_strategy_eng.pdf

[23] Id., referencing the Swedish ICT Commission Report *Framtidssäker IT – infrastruktur för Sverige* [A future-proof IT infrastructure for Sweden]

[24] See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: http://www.oecd.org/dataoecd/22/15/39574806.xls, *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: http://www.oecd.org/dataoecd/21/35/39574709.xls, and *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: http://www.oecd.org/dataoecd/10/53/39575086.xls

[25] See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: http://www.oecd.org/dataoecd/22/15/39574806.xls

[26] See *IT and Telecommunications Policy Report 2005* at: http://en.vtu.dk/publications/2006/it-and-telecommunication-policy-report-2006/it-and-telecommunication-policy-report-2006.pdf

[27] See *IT and Telecommunications Policy Report 2008* at: http://en.itst.dk/the-governments-it-and-telecommunications-policy/it-and-telecommunications-policy-reports/filarkiv/IT_and_Telecommunications_Policy_Report_2009.pdf

[28] See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions* (Dec. 2008) at: http://www.oecd.org/dataoecd/22/15/39574806.xls, *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: http://www.oecd.org/dataoecd/21/35/39574709.xls, and *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: http://www.oecd.org/dataoecd/10/53/39575086.xls

[29] See *E-Taiwan Program Vision* (May, 2002) at: http://www.etaiwan.nat.gov.tw/content/application/etaiwan/egeneralb/guest-cnt-browse.php?cnt_id=366

[30] "Privatization of Telecommunication Business Policy White Paper", published by Ministry of Transportation and Communications; January 2001, p.33. The number of households in Taiwan is 6.5 million in 2000. See: http://www.stat.gov.tw/lp.asp?ctNode=549&CtUnit=384&BaseDSD=7

[31] Taiwan National Information and Communication Initiative Committee announced "National Information and Communication Initiative" and provide details of the plan "National Information and Communication Development Plan (2007-2011)". p.12. http://www.nici.nat.gov.tw/content/application/nici/generala/guest-cnt-browse.php?cnt_id=2283

[32] National Information and Communication Initiative established by NICI, p.11. http://www.nici.nat.gov.tw/content/application/nici/generala/guest-cnt-browse.php?cnt_id=2283

[33] See *The Status of Broadband Access Services for Consumers and SMEs*, p. 4 (Oct, 2000) at: http://en.itst.dk/the-governments-it-and-telecommunications-policy/publications/the-status-of-broadband-access-services-for-consumers-and-smes/The%20status%20of%20broadband%20access%20services%20for%20consumers%20and%20SMEs.pdf

[34] See *OECD Broadband Statistics 1c. Total broadband subscribers by country, by country, millions (*Dec. 2008) at: http://www.oecd.org/dataoecd/22/15/39574806.xls and *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: http://www.oecd.org/dataoecd/21/35/39574709.xls

[35] See *OECD Broadband Statistics 1d. OECD Broadband Subscribers per 100, by technology* (Dec. 2008) at: http://www.oecd.org/dataoecd/21/35/39574709.xls

[36] See *OECD Broadband Statistics 5a. Average advertised broadband download speed, by country, kbits/s* (Sept 2008) at: http://www.oecd.org/dataoecd/10/53/39575086.xls